of California
Regional
Facility

John White

8 December, 18[illegible]

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Comte Bernard

Capitaine [illegible] de Lespinasse

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FELIS LEO

THE LION

THE

WONDERS

OF

ANIMATED NATURE;

CONSISTING OF

DESCRIPTIONS AT LARGE

AND

ENGRAVED REPRESENTATIONS

OF THE PRINCIPAL

ANIMALS AND BIRDS

IN THE

ROYAL MENAGERIES

OF

LONDON AND PARIS.

TRANSLATED FROM LA CEPEDE,

WITH CONSIDERABLE ADDITIONS BY THE ENGLISH EDITOR.

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INTRODUCTION.

IN the time of Pliny, there were several valuable collections of animals in Rome, then the capital of the world. These were the property of several rich and noble Romans; and from them were written the descriptions in the well-known Natural History of that celebrated ancient.

During the reign of Louis the Fourteenth, there was established at Versailles a menagerie, to which the work of Perrault is indebted for its origin. That institution was continued during the reign of Louis the Fifteenth; when, from the same source, in a great measure, Buffon's Natural History was given to the world.

Buffon, Linnæus, and Daubenton, gave to the mind, a new impulse for the study of nature, and for the application of that study to purposes of public utility. In many countries of Europe, establishments were formed, which may be considered as the ground-work or models of the fourth kind of menagerie.

After the fury of the Revolution had in some measure subsided, the cultivators of natural history were gratified by the erection of a National Museum and Menagerie in Paris, on a scale so grand and extensive as to demand universal applause. The care and management of this institution were given to men of high and deserved

celebrity. The animals that were left of the Menagerie at Versailles, were sent hither. The plan of small cages, formerly adopted for the confinement of animals, was now changed for that of inclosures and dens, of such magnitude as to allow them room for exercise, and for the full developement of their faculties and strength.

"This immense menagerie (says M. La Cépède) may be compared to a varied and lively country, where the different species of animals are indulged with as much liberty as, in such a situation, it is possible to allow them, without danger to the numerous, and sometimes imprudent, spectators who visit them;—where the shelter, situation, and care that is paid to them, are in the best possible degree adapted to their organization; and where, living in the midst of the trees and plants of their respective countries, or at least among such as are most nearly allied to those of their native soil, they amuse themselves in their peculiar frolics and gambols. Here they neither experience the pain of exile, nor the loss of their independence; and they present to the eye of the observer a faithful representation of the living productions of nature of all the most remarkable countries of the globe.

There are three principal objects in this establishment.

The first is to satisfy public curiosity; to give a lasting and easy instruction under the inducement of satisfaction and delight to observe the natural habits of the animals, and to view the species themselves which hitherto have chiefly been represented to us by the portraits of Pliny, Linnæus, and Buffon; to substitute, for attitudes of constraint, the movements of independence, and, for the privations of slavery, the enjoyments of freedom; and, by this essential change no longer to injure the morals and the feelings of mankind,

by exposing to their views animals experiencing torture, which no system, adopted either for use or curiosity, can justify.

The second object is to give to naturalists the only possible means of perfecting, in any extensive degree, their knowledge of zoölogy; and the third, to be of service to society, by rearing and domesticating such foreign animals as may be of use in public economy.

It is greatly to be lamented that similar institutions are not formed in every civilized country of the world, since the most essential services would be derived from them, not only for the improvement of the science of natural history but likewise of public and general utility. In England, the Menagerie in the Tower of London contains the only national collection of animals that we possess; and these are principally confined to the larger species, such, chiefly, as lions, tigers, leopards, &c.

The dens in the front yard or court are only five in number. They form the segment of a circle, elevated about four feet from the ground, and are secured in front, each by a strong iron grate. To each of them there is a small flight of steps that leads into the bed-place of the animal, which is below, and on the ground. This lower apartment is divided into two by a strong boarded partition, which the keepers can draw out or thrust in at their pleasure. By means of this, they are enabled to confine the animal to his bed-place, while they enter and ascend the steps, to clean out or repair the upper apartment; or to confine him above, while they fresh litter his bed. The second court contains nine regularly built dens, and five others that are smaller and differently constructed.

In the five dens of the first court-yard of the

Tower, are now confined one Lion, three Lionesses, and a spotted Hyæna. In the dens of the second or inner court, are, 1. A male Leopard, that was given to the Prince of Wales by Mr. Devaynes, the banker, who imported it from Bombay ; 2. A female Panther, called Traveller, sent over by the Dey of Algiers ; 3. A young Lion, called Nero, about three years old, a present from the Emperor of Morocco; 4. A beautiful female Leopard from the coast of Malabar ; a very fierce Lioness, called Fanny, which was whelped in the Tower in the month of May, 1792 ; 5. A black female Leopard from Malabar which was given to the King by Governor Hutchinson, and landed in England in the year 1799 ; 6. A Tiger from Bengal, called Harry ; and 7. Three hunting Tigers, taken at the siege of Seringapatam, and sent over to this country by the Marquis Wellesley.

The Menagerie at Exeter 'Change contains some valuable animals : but they are the private property of an individual, who keeps them for the purpose of making money by the exhibition of them.

OF THE LION.

WE are not to be surprised that an animal so majestic, and, in every respect, so terrible as the Lion, should, in all ages, have attracted the attention of travellers, and of those who delight in the exercises of the chase; and at the same time have given rise to innumerable exaggerated and fabulous relations. It has supplied images to poets and orators; and the fables, from their frequent repetition, have been admitted into the writings of naturalists, and been afterwards considered as founded in fact, by those who have had no opportunity of observing the animals themselves, and who have not had discrimination sufficient to judge correctly of the assertions of others.

We ought not, however, from these examples, to reject all the circumstances relating to this animal which the ancients have recorded, and which have not been verified by the moderns.—They had many more opportunities for observation than the moderns have; and were thus enabled to observe many facts which may have escaped notice in latter times. Many countries were formely infested by Lions, where none are now to be seen. It is well known that they have

long been extirpated from Europe; and yet, in the time of Aristotle, they were found in all the mountains of the north of Greece, from the river Nestus, near Abdera, in Thrace, almost to the Achelous in Acarnania. According to Herodotus, the camels that carried the baggage of the army of Xerxes, were attacked by Lions in Pæonia, one of the countries of Macedon. Pausanias, who records the same fact, adds, that these Lions often went southward as far as Mount Olympus, which separated Macedonia from Thessaly. At present, the Lion is by no means common even in Asia, if we except some countries between India and Persia, and some districts of Arabia.

In short, in those countries which Lions chiefly inhabit, their numbers were infinitely greater in former times than they are at present. It is scarcely to be conceived how, otherwise, the Romans were able to procure the prodigious number of these animals, which, from time to time, they exhibited in their public shows. Pliny has supplied us with details on this subject, which almost surpass all belief. "Quintus Scævola (he "says) was the first who exhibited many of them "at once in the Circus, during the time he was "ædile. Sylla, in his prætorship, had a hundred "Lions, all males, to fight at the same time.— "Pompey afterwards six hundred (of which three

" hundred and fifty were males), and Cæsar four " hundred." Seneca, it is true, informs us that those of Sylla had been sent to him by Bocchus, king of Mauritania; but, at this day, the princes of that country consider one or two of these animals as a grand present. The same abundance continued, during some time, under the emperors: but, in the second age, it appears to have begun to diminish, since Eutropius then considered the appearance of a hundred Lions, in the triumph of Marcus Aurelius, as an exhibition of great magnificence. It was at length considered necessary to prohibit the combat of Lions in the mass, and to confine it to that of single animals, lest there should be a want of animals for the Circus. This law, however, was repealed by Honorius; the destruction continued, and the pursuing of Lions for the supply of the games, drove them to seek for security in the depths of the forests, where to the present day they still confine themselves.

This great supply of Lions afforded good opportunities for taming and domesticating some of the species; and consequently their education was carried to such perfection, as to be truly astonishing. Hanno, a Carthaginian, was the first who tamed a Lion; and he was condemned to death for what his fellow-citizens considered so great a crime: they asserted, that the repul-

lic had to fear the worst consequences from a man who had been able to subdue so much ferocity.—A little more experience, however, convinced them of the fallacy of that ridiculous judgment. The triumvir Antony, accompanied by the actress Cytheris, was publicly drawn by Lions in a chariot.

It is not surprising that the ancients, who saw so much of these animals, should, in many respects, have been better acquainted with them than we are; and that many facts, which now astonish us, did not escape their observation.—Such, among others, is the facility with which a Lion, in captivity, will attach himself to his companions, even though of a different species. Ælian, quoting Eudemus, speaks of the affection entertained by a Lion for a dog. He informs us that a Lion, a dog, and a bear, lived together in the most intimate friendship. The attachment between the two first was most tender. The dog, in one of his frolics, having by accident bitten the bear, the natural ferocity of that animal returned, and he tore the offender to pieces. but the irritated Lion revenged the death of his companion, by immediately destroying the bear.

The ancients were not ignorant of most of the circumstances relative to the production of the Lion. Plutarch expressly says that the Lioness is the only carnivorous animal whose offspring

come into the world with their eyes open; and Ælian informs us that Democritus had asserted the same thing long before Plutarch. There are known to be varieties of the Lion species, which in modern times have not been observed by any naturalist or traveller; and others which have been only lately re-observed. Among the latter is the Lion without a mane, mentioned by Solinus and Oppian, which they have attributed to a mule breed between the Lioness and the Leopard. M. Olivier, in his travels in Persia, has assured us that such a race exists at this time in the neighbourhood of Bagdad. The ancient writers speak of *black Lions*. Those of India, according to Ælian, were of that colour, as likewise those of Syria, according to Pliny; and those of Æthiopia, according to Oppian. It is well known, that, in all countries inhabited by these animals, there are some more brown than others; and many of the latter may have a blackish cast. The one represented in the engraving which accompanies the present account, was much browner, and had the hair of the under parts of his body, considerably more black, than is usual in Lions that are now brought to Europe.

It is very probable that formerly Lions may have been observed with frizzled hair, although none of the modern travellers speak of having seen them. The ancients appear to have remark-

ed this race more commonly than any of the others, since they have so often represented it in their statues and bas-reliefs. They assert that it was the most cowardly of any, and most easily to be subdued. If it were not for this circumstance we might suppose, with one of the most celebrated of the French antiquaries, that the frizzled Lions were those of Thrace; but such an opinion could not be correct, since Pliny assures us that the Thracian Lions were much more strong and powerful animals than those either of Egypt or of Syria.

The reports of the ancients respecting the generosity of the Lion, his regard for weakness, and particularly the strength of his memory, are in many respects very extraordinary; and, though not perhaps entitled to unlimited credence, yet there is reason to suppose that the greater part of them at least are founded in fact. Pliny relates that the Lion has such respect for the female sex and for infants, that he will on no occasion attack them; and this is repeated by the Italian traveller Misson. A tame Lion, which escaped from bondage and was retaken, is said to have recognized his keeper at the moment he was about to spring upon and devour him. This might have happened in one of the combats at the Circus: a criminal might contrive to fight with an animal that his master kept (and which he might have

previously caressed and attended), in the hope of obtaining pardon from so singular and interesting a circumstance. The story of Androcles is well known.

There still remain many particulars respecting the history of the Lion, which are very doubtful; such as the taste of his flesh, which Buffon and others assert to be very unpleasant, and which Dr. Shaw, in his travels in Barbary, has on the contrary declared to be much like that of the cow. The latter writer, however, appears to be correct, as Cuvier was informed by a whimsical man who had tasted the flesh of a great number of wild animals.

It is not yet agreed to what age the Lion will live. Buffon reasoning from the period of gestation, has believed the natural duration of his life to be somewhat more than twenty-five years; but, in the Tower of London, Lions have been kept, which were known to be between sixty and seventy years old.

The Lion, whose figure accompanies the present account, is one of the most beautiful animals of his kind that have ever been seen in captivity. He was caught, about ten years ago, between Constantine and Bonne, in the dominion of the Dey of Algiers after a chase of three days.—The Bey of Constantine presented him to the French republic; and he is at this time deposited

in the Menagerie of the Museum at Paris. His mane did not begin to appear for nearly three years and a half after he was landed in France; and it increased in length and thickness every year for a considerable length of time. The color of the animal grows continually darker. When caught, he was scarcely twelve months old; and his teeth were then cutting.

This Lion devours every day ten pounds of flesh, and laps about half a pail full of water.

The keepers of the animals, in the Tower of London, and in Exeter 'Change, assert that no person can safely approach the Lions while they are eating. Instances, however, have occurred, in which dogs, kept in the same den, have even been allowed by the magnanimous beasts to partake of their food. The Lion Hector, in the Menagerie at Exeter 'Change, was so tame as to permit the keeper to enter his den, and play with him: but the man was never so rash as to attempt any familiarities during the time of his feeding. This animal was so much attached to his keeper, that, during the man's absence, occasioned by illness, he refused a considerable part of his food, and exhibited symptoms of the greatest uneasiness. As soon as the man recovered, he went up to the den, the animal seemed overjoyed at the re-appearance of his friend, and from that time took his food as usual.

A Lion, about three months old, was caught in 1787 in one of the forests of Senegal, in Africa; and Pelletau, at that time the director of the African company in that colony, undertook to superintend the animal's education. The mildness of his physiognomy and the unusual gentleness of his disposition rendered this Lion a great favourite with all persons who saw him. Sensible of the good treatment that he received, he seemed, on all occasions, highly delighted with the caresses and attention of his friends, and was, in most respects, as tractable as any domestic animal could be. Such was his love of society, that he was always delighted to be in a room where many persons were assembled: and what was very extraordinary, he lived in perfect harmony, and was at all times on the best terms, with the other animals of every species, that were kept in his master's house. He slept in the same place with sheep, dogs, cats, monkeys, geese, ducks, &c. When he was about eight months old, a bitch produced two whelps on his bed. This new family excited a most lively interest in the Lion: and if he had been the parent of the little animals, he could not have displayed for them an attachment more tender than that which was remarked in him.—One of the whelps died; his affection was redoubled towards the one that was left; and this

affection appeared to regulate all his movements. —At the age of fourteen months, this Lion was (in 1788) embarked, with his little companion, for France. It was feared that the change of situation and habits would have such influence as to render him in some degree ferocious. This, however, was not the case: he was always the same, and could at all times be allowed to range at liberty in the vessel. He was landed at Havre, and (attended by his faithful dog) was, with only a cord attached to his collar, conducted thence to Versailles. On the death of the dog, which took place some little time after their arrival at Versailles, he seemed to be very disconsolate and miserable; and it was thought necessary to supply the loss of his companion by putting into his den another animal of the same species. The second dog, terrified at the sight of so tremendous a beast, immediately endeavoured to conceal himself; and the Lion, surprised by the noise, struck the animal with one of his fore paws, and killed it on the spot. He did not, however, attempt to devour it. A third dog was put into his den, and lived with him for some years afterwards.

No instances have occurred, in England, of Lions having allowed any other animals to be inmates with them, except dogs. The Lion, called Hector, now in the Tower, had a rabbit,

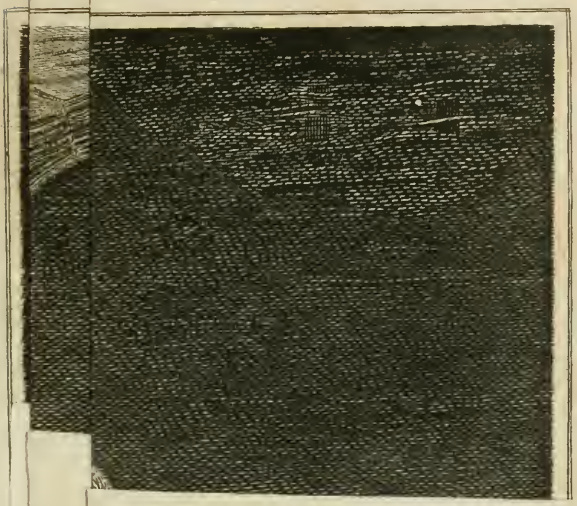
and, at another time, a cat, put into the den with him, by way of experiment: but he destroyed both of them.

Felix Cassel, the principal keeper of the animals in the Museum at Paris, asserts that the Lion is so far from being terrified at the crowing of a cock, that he has seen one of these animals seize and devour two or three cocks almost in as many minutes. Nor is he alarmed at the cry of a hog, since these animals are the chief prey of the Lions in Barbary. Cassel has seen a Lion carry off a hog, as a wolf would a sheep, and another kill an ox, and drag it along upon the ground for nearly three miles. This person has remarked, that, in Barbary, the Lionesses generally produce their offspring in the neighbourhood of marshes or rivers; which, he believes, is for the purpose of more easily supplying them with food, from the numerous animals which come to such places to quench their thirst. The male assists in procuring sustenance for the young ones; whence he infers that these animals are monogamous---that is to say, that each forms an attachment to a single individual of the other sex.

THE LIONESS.

SINCE the establishment of Menageries for promoting the science of natural history, none has been known to contain so many individuals of the Lion species, as the Menagerie of the Museum of Natural History in Paris. There were here, at the same time, a full grown Lion, and four Lionesses; three young males, and two young females; and, a little while before the writing of this account, there was another Lion, of which M. Toscan, librarian to the Museum, has published a very interesting and well-written history. It is, therefore, not surprising that many excellent and valuable observations should have been made respecting the animals. From an attentive examination of those eleven individuals, it was easy to add numerous facts, before unknown, to those which naturalists had already collected.

The Lion has in his countenance an expression of magnanimity, boldness, gravity, and courage, which seem the result of his superiority in strength and power. The Lioness possesses considerable grace and lightness. Her head is not ornamented with the long and tufted mane which surrounds the face of the Lion. Endowed with the dis-



characters, which may be considered as the dis-

A LIONNESS & HER WHELPS

In the Menagerie of the Museum of Natural History at Paris.

tinctive attributes of her sex, she exhibits more amiable and pleasing traits of character, and more activity of motion. Smaller than the Lion, she has perhaps less strength; but she compensates by her agility for what she wants in size. Like the Lion, she does not touch the ground with the extremities of her toes. Her legs, elastic, and formed for activity, may be considered as four springs ever ready to unbend themselves, and propel the body to very considerable distances along the ground. She leaps and frisks about like the Lion; but her vivacity is greater than his, her sensibility more ardent, her desires more strong, her repose shorter, her flight more rapid, and her leaps more impetuous.

Like the Lion and other feline animals, she has, in each of her jaws, six very sharp incisive or cutting teeth, with two strong tusks or canine teeth, and many sharp-pointed grinders. Her tongue, as well as that of the male, is rough with spines or hard papillæ, pointing backward, which will easily lacerate the skin. Her claws are long, hard, and hooked; these are not extended, except when she has occasion to use them in seizing or striking; but are guarded from injury by their position, and consequently are kept perfectly sharp for a great length of time.

These animals have several very remarkable characters, which may be considered as the dis-

tinctive indications of the species. Their body is of an uniform colour, (without any spots) of which the red or yellow shade is sufficient to distinguish the Lion species from all other carnivorous animals whatever, and even from the Cougars, the pretended Lions of America. A tuft of hair, at the extremity of their long and smooth tail, which is frequently agitated, and beaten with violence from side to side, is another peculiar characteristic of the Lions. They have some hair under the ears and lower jaw, longer than in other parts of their body. Their neck is very thick: their muzzle, and particularly the chin, is rounded; and such are the dimensions of the three principal parts of the face, the forehead, the nose, and the lower part, that these three divisions, nearly equal to each other, and somewhat formed like the three analogous divisions of the human face, present, on the whole, an air of greatness, majesty, and command, unknown in any other animal.

Equally courageous with the Lion, the Lioness, when pressed by hunger, will attack every species of animal that comes in her way. She is, like him, generally compelled to have recourse to stratagem, to conceal herself from observation by couching on her belly in the midst of herbage or underwood, and there to wait till the prey comes within her reach. She then suddenly rushes on

the victim, seizes it at the first bound, and soon destroys it. In the forests of Africa, and on the borders of deserts, in the countries of torrid climates, inhabited by these animals, they generally feed on the gazelles and apes, which have no means of escaping their attack but by a precipitate flight. It has been remarked that the monkeys and other four-handed animals of the African forests which delight in running about among the branches of the loftiest trees, find there a secure asylum from the talons of the Lions; and that the latter, notwithstanding their strength, their agility, and the sharpness of their claws, are not able to climb into the trees after them, like some others of the feline species, and particularly the tiger; the size, weight, and general conformation of whose body is very similar in most respects to that of the Lion. M. De La Cépède, however, has some doubt of the truth of this assertion, and is inclined to believe, from the form and attributes of the Lion, as well as from the different movements which he has observed this animal exert in the inclosures of the Museum, that he is able to climb the trunks of trees, at least as easily as the tiger, and the other large-bodied animals of the genus.

The Lioness never preys upon dead bodies, (particularly those in which putrefaction has commenced) unless she be constrained to do so by ir-

resistible necessity. She prefers the flesh of those animals which she kills, to that of all others. She does not, however, destroy so many as either the tiger or the panther. It is chiefly during the time when she is rearing her offspring that she is most terrible. How astonishing is the instinct which induces nearly all females to redouble their exertions on such occasions in procuring food for the supply of their young families! How active is then their sensibility! How great their passions! How powerful their wants! Their existence is, as it were, extended into their offspring; and thus a careless observer might suppose, that, being exposed to more enemies, instead of having additional courage, they would have more fears, and be inspired with more efforts to escape the dangers with which they are surrounded.

When the Lioness has young ones to nourish and defend, she will combat with fury even the most powerful animals that interrupt or attack her. The tiger, the elephant, the rhinoceros, or the hippopotamus, would, on these occasions, in vain attempt to oppose her. She will even fight with them when the affections of a mother do not add ardor to her courage. When pursued by mankind, she is only to be conquered by means of the powerful weapons which they bring against her.

The nature of this noble and formidable animal

has undergone a very considerable change from the encroachments of mankind. By their becoming more scattered over the surface of the globe, and every day approaching nearer to the retreats of the Lion, his empire has been very greatly diminished; and he has even been exiled from many of his former habitations. He has been chased from Thessaly and Macedonia, from Thrace and other European countries, where, in the time of Aristotle, he was wont to range uncontroled. He has been banished toward the tropical regions, and constrained to seek refuge on the borders of the burning deserts. Compelled, for the most part, to inhabit places where the frequent want of water, of vegetables, and fruit, has greatly reduced the numbers of the ape tribe, of the antelopes, and other frugivorous and herbivorous quadrupeds, on which he chiefly preys; the number of individuals of this majestic species has likewise been much diminished.

We must not, however, be led to believe, with many naturalists, that the increase of mankind is the only cause of the diminution of the Lions.---They are found now in much smaller numbers than they were twenty centuries ago, in Southern Asia, in the neighbourhood of Mount Atlas, in the forests adjacent to the Great Desert of Zaara, and in the different districts toward the north of Africa. Yet it is well known that those Asiatic

and African countries have been inhabited by mankind for at least two or three thousand years; formerly, by nations which have been celebrated for their riches, their industry, and prowess, and at present only by a weak, poor, ignorant, and semibarbarous race. It is most probable that the climate, in those regions, has been the principal cause of this fatal change to the Lions. The forests having decayed from age, and not been renewed by nature; the high lands having been reduced by the winds, the mountains lowered, and consequently the rains less abundant; the springs having been dried up, and the general sterility augmented; all these circumstances have combined in diminishing the empire and reducing the numbers of the Lions. The invention of fire-arms has likewise increased a hundred-fold the power of man, who is certainly the most formidable and dangerous of all their enemies.

These animals, as we have already remarked in the preceding account of the Lion, are frequently taken alive, and, by proper care and attention, are rendered so tame, and are inspired with an attachment so lively and durable, as entirely to convert their natural ferocity of disposition into a very surprising degree of docility. At Constantinople, a short time ago, one of the ministers of state had a Lioness which was often with him, and which was allowed to play about

in his presence, and to range at liberty in his palace, like the most domestic and peaceful animals.

The Lioness likewise is known to exhibit an attachment toward dogs, as great and as durable as that of the Lion. At the time when the present account was written, there was a Lioness in the Menagerie of the Museum, which not only allowed a young dog to live with her, but appeared to have great affection for him. As if sensible of his caresses, she was always delighted when he was near her, and melancholy when, at any time, he was for a while taken away.

A Lioness, that was figured in "La Ménagerie du Muséum," and a copy of which figure is inserted as a frontispiece to Mr. Bingley's Animal Biography, produced young ones in her captivity, when about seven years of age. She was caught with the male parent of these young ones, when about eighteen months old, in a trap laid in one of the woods near Constantine, in the North of Africa. The male is about the same age, and was probably of the same litter. Their affection for each other commenced, therefore, with their existence; and it has by no means been diminished during their progress in age. In the year following that in which they were caught, Felix Cassel, the principal keeper of the Museum, who

was sent into Barbary, by order of the French government, to purchase uncommon animals, bought these; and, in the course of a month afterward, they arrived in Paris.

As Gesner had long since written that young Lions had been produced in the Menagerie at Florence, and Willughby had said the same thing of a Lion and Lioness kept at Naples; and as young Lions had been whelped in England, great hope was entertained that the above mentioned pair of animals might have offspring in their captivity; and that hope was not disappointed.

The first time the Lioness was with young, she miscarried at the end of about two months, bringing forth two fetuses. The second time she produced, at the end of about a hundred and eight days, three young ones. One of these, about five hours after it came into the world, had the following measurements.

Eighteen inches and a half from the fore-part of the forehead to the origin of the tail.

Four inches and a quarter from the muzzle to the occiput.

Three inches and a quarter from one ear to the other.

Four inches and three quarters from the elbow to the end of the toes of the fore feet.

Three inches and three quarters from the knee to the heel.

Three inches and a half from the heel to the extremity of the toes of the hind feet.

Six inches and a quarter from the origin of the tail to its extremity.

These little animals were, at first, entirely destitute of hair; and we are informed that the long hair or mane on the neck and round the face of one of the males which survived the rest, did not begin to appear till he had attained the age of nearly three years and a half; and that, from that time, this has been continually increasing in quantity. He had no tuft at the end of his tail till about the same period. The hair of all the young animals of this litter was at first woolly, and not of the same color as that of their parents, but a mixed grey and red, marked by a great number of narrow brown stripes. These were very distinct at the middle of the back, and toward the origin of the tail; and they were disposed transversely on each side of a longitudinal stripe, of the same color, that extended from the back of the head to the end of the tail.

Young Lions have therefore a singular and very peculiar kind of *livery*, if it may be so called, and it is possible that this disposition of their shades, (which shows their connexion with the fasciated *feline* species) remarked, by travellers, in young individuals, and thence attributed to the full-grown animals, may have afforded ground

for the notion entertained by the ancients, and mentioned both by Ælian and Oppian, that there was in the Eastern deserts a race of striped Lions.

The young Lions present, at first, only three of the essential characters of their species; namely, a thick neck, the muzzle and chin rounded, and the three parts of their face (the forehead, nose, and lower part) equal. But, as they increase in size and age, their stripes disappear, and their colors resemble those of their parents: the proportions of the different parts of their body and limbs become also by degrees similar to those of the adult animals.

At the age of a month, the young males, produced in the Menagerie of the Museum, had still the longitudinal and transverse stripes on the back. Their dimensions were then five times as large as those of the figures in the engraving.*

In the month of June, 1801, the above mentioned Lioness produced two other young ones, both females, and after the same, or very nearly the same, period of gestation. This period may therefore be now considered as exactly ascertained. Ælian had fixed it at two months. Philostratus, among the ancients, and Wicot, among the moderns, believed that it was much longer, and that the Lioness went with young almost six

* See the frontispiece to Mr. Bingley's Animal Biography.

months; and Buffon was inclined to the latter opinion. We can, however, now say, with certainty, that the time of gestation, in these animals, is a hundred and eight days, or somewhat more than three months and a half. The cat goes with young generally about fifty-five or fifty-six days; and consequently her period of gestation is equal only to about half that of the Lioness.

Aristotle believed that the Lioness produced five or six young ones at the first litter, four or five at the second, three or four at the third, two or three at the fourth, and one or two at the fifth, which he considered to be the last. According to Willughby, the Lioness in the Menagerie at Naples produced five young ones at her only litter. It appears that Aristotle had been misinformed, that Buffon had founded his observations on conjecture, and Willughby may not have been correct, since the Lioness of the Museum produced, as we have before remarked, two at her first litter, three at the second, and two at the third.

It is not improbable that the writers of natural history may have been in error, when they have asserted that the Lioness only produces offspring once in the year. If this observation be true, it can only apply to such animals as range abroad in a state of nature, since the Lioness of the Museum

littered twice within nine months, namely, in October, 1800, and afterwards in the month of June following.

A little time after the production of the two females, the three animals of the former litter became very mischievous. One of these, when about three months old, was driven, against his inclination, into the garden of the Museum, when he made a spring at the keeper, Felix Cassel, and seized his arm with so much violence as to tear the sleeve of his coat. We are not able, any further, to describe the developement of character in the above-mentioned three animals, since two of them have fallen victims to the first effects of dentition, an operation very dangerous to most animals that are produced in captivity. The Lion that bit the keeper was one of those that died.

Both the parents continue still to be very much attached to their keeper, whom they obey with great docility. It was only during the time that the female was in heat, that the male became so furious, as not to permit even Cassel to approach him.

The roaring of the Lion is composed of prolonged sounds, very deep, and interrupted by sharper tones, and a sort of trembling or jarring noise. It varies both in duration and loudness, in high or low tones, according to the age of the

animal, and according as it is moved by its various affections, passions, or wants.

The male animal in the Museum begins to roar at break of day. All the females follow the example; and they continue their noise for about ten minutes. They recommence it after they have been fed, and continue it for about the same length of time. It is said that their roaring at these two periods is expressive of their pleasure, in first seeing the light of day, and in having their appetites satisfied. They seldom roar at any other times, except to announce some change of weather, or when their keeper has been long absent from them. The Lions in the Tower of London generally begin to roar about the commencement of twilight.

In a state of nature the Lion most usually quits his den during the night, since the peculiar structure of the eyes of these animals (as in all others of the feline tribe) prevents them from seeing objects in the glare of sunshine, and since they are then the better enabled to surprise their prey by stealing unawares upon it. During the day-time, therefore, they sleep in their caverns; but, in captivity, they are not compelled to search for their own food, or to lay any stratagems to surprise their prey: they are likewise shaded during the day-time from a light that would otherwise be too vivid for them; and con-

sequently, in this state, the animals always sleep in the night.

The following are the particular dimensions of the above-mentioned Lioness.

Twelve inches and three quarters from the extremity of the muzzle to the nape.

Fifty-six inches and a quarter from the nape to the origin of the tail.

Forty inches and a half from the top of the head to the ground.

Thirty-five inches from the top of the shoulders to the ground.

Seven inches and a half from the base of one ear to that of the other.

Ten inches and a half from the upper extremity of the shoulder to the elbow.

Nineteen inches from the elbow to the ground.

Nineteen inches from the top of the rump to the knee.

Fourteen inches and three quarters from the knee to the heel.

Thirteen inches and a half from the heel to the end of the toes.

Thirty-one inches and three quarters from the origin of the tail to its extremity.

In an inclosure next to that which contains this Lioness, there is another Lioness, which was caught in the interior of Africa, at a greater distance from the districts inhabited by mankind,

than any of the other animals of the same species in the Menagerie. According to the report of Felix Cassel, she was brought from the border of the great desert of Zaara. Her ferocity is so great, that it seems almost impossible to render her in the least degree tame. This circumstance seems to confirm the observation of Buffon and some other naturalists, that, the further these animals reside from the habitations of man, and the nearer they are found to the burning and sandy plains of Asia or Africa, the greater is their native strength, courage, and ferocity.

In the preceding account, it has been remarked that the mane on the neck and round the face of a young Lion, that was littered in the Menagerie of the Museum at Paris, did not begin to appear till the animal was nearly three years and a half old. A Lion, that was produced in the Menagerie of the Dey of Algiers, on the memorable 1st of August, 1798, (the day on which the late celebrated and much lamented Nelson obtained his signal victory over the French fleet at the mouth of the Nile) and thence called *Victory*, had acquired a long and shaggy mane before he was seventeen months old. This noble and beautiful animal was brought to England, and, in the month of December, 1799, was placed in the Menagerie at Exeter 'Change, London.

To these observations on the nature and cha-

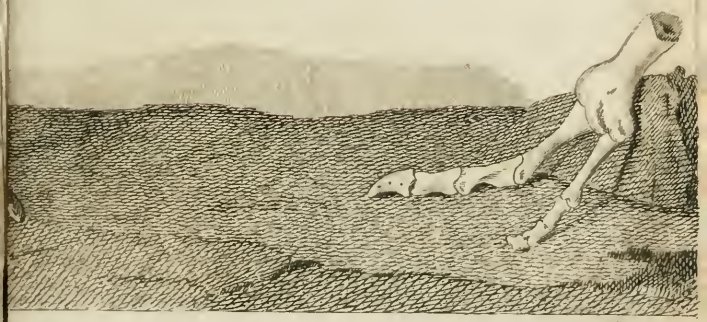
racter of the Lion species, we will add some others relative to the peculiarities of its structure and organization. Without having a body or limbs of very extraordinary bulk, when compared with some other quadrupeds, such as the elephant, the camel, or even the horse; it is nevertheless endowed with strength superior to that of any animal of its size. Its bones are so hard, that the ancients entertained a mistaken notion that they were solid; and they attributed to them some of the properties of flint. We may judge of the enormous strength of the Lion, by the size and thickness of his head and neck, the size of his jaws, and of the teeth with which they are furnished, the thickness of his tail and legs, and by the dreadful claws with which the toes are armed. The number and disposition of the teeth are similar to those of all the feline tribe; and most of the internal organs are also similar. The stomach is greatly elongated; and its internal membranes have longitudinal folds, not much unlike those observable in the stomachs of the ruminating quadrupeds. The gall-bladder has also several folds or angles, similar to, but more numerous than, those of the cat. M. Daubenton has taken an ounce and three drams of gall from the gall-bladder of a Lion. There are, on each side of the rectum, two vesicles, furnished on the outside with a muscle, and lined within with a whitish

membrane. This contains a milky, inodorous substance. Similar vesicles to these have been remarked in the cat and dog. The skeleton of the Lion does not differ very essentially from that of the cat.

THE OSTRICH.

THE ostrich, which is the largest of all birds, frequently attains the height of seven or eight feet, and upwards. Its long and slender neck is clad only with a kind of down. The head is small in proportion to the body; but the eyes are large and vivid. The beak is short, blunt, and flattened horizontally. The feathers have no strength or hardness: their stems are flexible; and the barbs or vanes do not catch upon each other, like those of most other birds. It is this which gives them their tendency to wave, and has caused them to be used as ornaments in head-dress. The wings of the ostrich are extremely short, when compared with the size of the body; and they are furnished only with these waving and flexible feathers. The thighs and legs are of astonishing strength. The feet have only two toes each, of which the outer one is much shorter than the other, and has no nail or claw.

The male is generally of a brown black color---the plumage intermixed with white feathers. The female is entirely of a uniform greyish brown.



Harvey sculp

MALE OSTRICH.

STRUTHIO CAMELUS Lin

Published March 1.1811, by R Phillips Bridge Street, Blackfriars London.

MALE OSTRICH

Warner sculp.

Female Ostrich

From the length of its legs and its naked thighs, the ostrich might be supposed to have a very near alliance with the *waders* (*grallæ* of Linnæus, and *échassiers* of the French naturalists); but the form of its beak, its great weight, and its entire residence on the most arid plains, give it a nearer approach to the *gallinaceous birds.*

In the interior of its body, the ostrich presents many curious particulars. Its tongue is very short, somewhat in the form of a horse-shoe, and has a prominence behind, which some writers have taken for an epiglottis.

The membranaceous partitions which separate the lungs from the abdomen, are furnished with muscles which render them somewhat analogous to the diaphragm of quadrupeds.

Between the crop and the gizzard, there is a very great dilatation, which many persons have considered to be a separate stomach; and thus have attributed three stomachs to the ostrich.

The skeleton of the ostrich differs in some respects from that of other birds. The sternum has no keel-shaped prominence in front, but has only the appearance of a flat kind of shield. The toes, although very unequal in length, have each three phalanges; a number which is observed in no other animal, except the cassowary. The bones of the wings, although very short, have, nevertheless, the same number, and are even of the same forms, as those of other birds.

The sight of the ostrich is very strong; and its hearing is peculiarly good: but the senses of taste and smell are both weak. The ostrich swallows, indiscriminately with its food, stones, and even pieces of iron or copper. This habit has induced some writers to assert that the animal could digest iron. Cuvier, however, observes, that the pieces of metal found in the ostrich's stomach, have, in some instances, appeared not to have been worn, as if by trituration with other hard bodies, but to have been eaten or corroded by some juice, as is evident from the inequality of the hollows or clefts produced by that juice. This was proved from the contents of the stomach of the individual represented in the engraving which accompanies the present account. The fragments of nails, &c. which it had swallowed, exhibited all the indications of true corrosion.

The ostrich frequently suffers much from its want of discrimination in the choice of food. The great quantity of copper that it swallows, has sometimes been known to poison it; and nails, and other hard and pointed substances, have not unfrequently been known to pierce the membranes of its stomach. Cuvier remarked, that, in the thickness of the mesentery of the abovementioned ostrich, there were two iron nails, which could not possibly have made their way thither, except by penetrating through the coat of the stomach:

they were completely incrusted by a greenish and very hard concretion.

This subject will be further illustrated by the following account of an ostrich which was purchased by Messrs. Delacosta and Curling at New York, from on board the ship Silenus, in the month of May, 1804. It had been brought thither from the Cape of Good Hope, and died on the first of June following.

On the nineteenth of May, this animal swallowed a small cotton handkerchief; and it picked up, and swallowed, every day, a considerable quantity of gravel, besides many pieces of china, queen's ware, glass, broken nails, and all kinds of metallic substances which it could find, of such size as to be admitted into its stomach. Its usual food was bread, potatoes, corn, and grass, which it continued to eat in great quantity during the first eight days after it had swallowed the handkerchief: but, in the beginning of the second week, it lost its appetite; and it was considered necessary to cram it, in order to keep it alive. This, however, proved ineffectual; and it did not survive more than three or four days.

On the day following that of its death, the body was opened in the presence of several medical gentlemen of New York; and, on examination, the stomach was found to be so full, as to be considerably distended. It contained a quan-

tity of partly digested grass, mixed with corn and potatoes undigested; and a great quantity of gravel, pieces of earthen ware and glass, some brass buttons, old nails, a piece of a small key, and several other things.

The handkerchief was found uninjured on the top of the contents of the stomach; and it was thought that this had caused an indigestion, which had at least accelerated the death of the animal. It could not, however, in all probability, have lived much longer, on account of a general inflammation which was discovered on the outside of the stomach, on the breast and rump, occasioned by some severe bruises which it had received either on board the vessel, or when it was shipped.

The pieces of iron that were found in its stomach, some of which appeared to have been swallowed a great length of time, are said by the examiners to have undergone very little alteration, further than what might be accounted for by their friction against each other, caused by the powerful action of the gizzard. The impression made on the minds of those gentlemen (different from that which induced the preceding remark of Cuvier) was, that they underwent no other change than would have taken place either in the human stomach, or in that of any other animal.

The ostrich described by Cuvier, in the Menagerie of the Museum at Paris, was excessively voracious; and, although grain and vegetables constituted the basis of its nourishment, it would indiscriminately devour all kinds of substances, both vegetable and animal. It seemed most fond of barley; and would eat, every day, about four pounds of this, with a pound of bread, and ten or twelve lettuces. In the summer time, it drank four pints of water in the day; and in winter, when it was necessary to keep it confined, it would drink more than six. This circumstance completely refutes the assertion of the Arabs, mentioned by Buffon, that the ostrich never drinks. It very frequently would throw the water over its body, and afterwards roll upon the ground.

Ostriches often become excessive fat. The last mentioned animal, when it was dissected, had fat to the thickness of two or three fingers in several parts of its body.

They have great muscular strength, particularly in the legs: in running, they often throw behind them very heavy stones to a considerable distance.

The rapidity of the course of the ostrich surpasses that of all known animals; and is such, that those persons who mount on its back, without having, by degrees, habituated themselves to

the exercise, are at first nearly suffocated. The wings, by beating against the air, serve to accelerate its speed: but they are not of sufficient size to enable the animal to elevate its body in the least degree from the ground.

With respect to instinctive faculties and sagacity, the ostrich is generally said to be much below most other animals. The people of the countries which it inhabits consider it even as an emblem of stupidity: they assert that it will hide its head behind a tree or other object, when pursued by the hunter, and there remain immovable, as if its whole body were concealed. This, however, is by no means the fact.

Its cry is weak, and somewhat resembles the cooing of a pidgeon. The voice of the male differs from that of the female, chiefly in being more strong. When the animal is teased, it threatens by a kind of hissing noise, not much unlike that of a goose. It likewise indicates its anger by raising and shaking its wings and tail.

The male, that is now in the Museum of Paris, frequently beats one of its feet against the floor of its inclosure, with as much force and noise as could be made by a hammer. This principally happens at the casual approach of a dog---to which animal the ostrich appears to entertain a peculiar antipathy.

We are assured by Thevenot, that, in their

wild state, ostriches associate in pairs, and that the same male and female are always constant to each other. Professor Thunberg, however, asserts, from information which he received in Africa, that these animals are polygamous; one male being united with three or four females in constructing a nest, and producing young ones. These females deposit, each, from ten to twelve eggs, which they hatch altogether; the male taking his turn of sitting upon them. The nest is merely a hollow place, which the animals scratch in the sand.

The female ostrich in the Museum at Paris deposited, in the year 1802, and in the space of two months, six eggs. The one of these which appeared most perfect, and which was as large as most of the eggs of ostriches that are brought to Europe, was examined in the scales immediately after it was laid, and was found to weigh nearly three pounds. In the exaggerated relations of some naturalists, it is asserted that the eggs of the ostrich sometimes weigh as much as fifteen pounds. A large shell, now preserved in the cabinet of the Academy of Sweden, weighs eleven ounces. It is ten inches and a half in length, and will contain upwards of four pints of water. Sparmann, in his Travels at the Cape of Good Hope, says that he never

found the eggs of ostriches to exceed the size of this shell.

Two of the eggs that were laid at Paris, were cooked; and their flavour was found to be much superior to that of the eggs of domestic fowls. At the Cape of Good Hope, the eggs of ostriches constitute an important article of commerce, though, (while that colony was in the hands of the Dutch) very little to the profit of the collectors of them. They were compelled to deliver them to the company at a low price; and the latter derived the chief part of the emolument arising from them, by selling them to the masters of such vessels as put in there for the purchase of provisions. They are useful in ships from the circumstance of their thick shells preventing them from becoming putrid so soon as the eggs of poultry. The Arabs frequently carry great quantities of them to Cairo and other towns of Egypt, where they meet with a ready sale, not only as articles of food, but likewise for the purpose of ornamenting the mosques and churches with the shells. When a Coptic priest says mass, it is always done opposite to a lamp which is placed between two shells of ostriches eggs. The Mahometans of the interior of Africa place the eggs of ostriches on the top of the spires of their mosques. The shells are frequently employ-

ed as ornaments for the persons of the Hottentots. They make collars and girdles of them, by grinding small pieces into the form of rings. The Dutch colonies at the Cape pulverise the shells, and mix them with vinegar for several kinds of diseases in their cattle. In order to take the eggs from the nest, without preventing the birds from depositing others in the same place, it is necessary to use a long stick, and push them out with this; for it is said that the mere touching of the place with the hand would make the birds forsake their nest.

An attempt was made to hatch some of the eggs which were laid by the female in the Museum at Paris, but without success.

In its wild state, the ostrich, according to the assertion of Aristotle, lays as many as twenty-five eggs; according to Willughby and Linnæus, fifty; and, according to Ælian, as many as eighty. This error, says Thunberg, has arisen from an ignorance in those writers that the animals were polygamous, and that three or four females deposited their eggs in the same nest.

The shells are sufficiently thick to admit of their being cut into, and used as, drinking-vessels.

Without the torrid zone, it is said that the ostriches frequently leave their eggs to be hatched by the heat of the sun; but that within the tropics they incubate in the manner of other

birds, and that they will guard and defend their offspring with great courage. The period of incubation is stated to be six weeks.

M. Le Vaillant has mentioned an extraordinary circumstance relating to the ostrich, which is confirmed by the relation of M. Bougainville, and proves this bird not to be in every respect so stupid and improvident an animal as many writers would have us to suppose. He says that the ostriches always deposit, on the exterior of their nests, a certain number of eggs, proportioned to the number of young ones to be produced. These eggs are not sat upon, but are designed for the first nourishment of the young ones which are hatched from the other eggs; and an ostriches nest is seldom or never to be observed without such reserve of eggs at a little distance from it.

It is asserted by Buffon, that, when Jannequin was in Senegal, two eggs, taken from an ostrich's nest, having been presented to him, he wrapped them up in tow, and put them into his chest; where, after some time, he discovered, that, from one of the eggs, a young bird had been produced.

This singular fact is mentioned by the writer with so much appearance of simplicity, that it is impossible to entertain any doubt respecting it. The following is a translation of the original passage inserted in his *Voyage de Libye au*

Royaume de Sénéga, le long du Niger, &c. page 161.

" The ostrich lays very large eggs, and, instead of seeking to conceal them, does not herself sit on, but abandons them to the heat of the sun, leaving them to be hatched by the powerful rays of that eye of the universe. As one proof of this, I shall relate a circumstance, which will not, perhaps, be easily credited, but which ought not to give offence.

" A negro having made me a present of two of these eggs, which I was desirous of carrying to France, I deposited them in my chest, carefully wrapped up in tow, lest they should be broken. They were left here for a long time without being seen; and one day, on opening the chest, I was greatly astonished to find that one of the shells was broken. Without attempting to ascertain by what means the accident had happened, I took it up, with the intention of throwing it out, when, to my infinite surprise, I observed a young ostrich to move under the thick skin of the egg. As there was no opening in this, I made one with my knife, in order to give the animal air; and I carefully replaced it in the chest. It lived for eight days, during which time I fed it with pieces of vegetables, which it readily took into its beak and swallowed. The same circumstance, no doubt, took place in the

other egg; for, on my return to France, I found that the shell of that also was broken."

We are informed by Thunberg and other travellers, that the eggs of the Ostrich sometimes contain a kind of small stones. These, which are not often more than two in number, are hard, white, or yellowish, and about the size of a small bean. At the Cape of Good Hope, they are sometimes set, and used for buttons. Thunberg had not the good fortune to find more than one of these tones, though he examined, for the purpose, a great number of eggs.

Professor Cuvier examined the fetus of an Ostrich, when just ready to quit the egg. It was covered all over with feathers, even in those parts which in the old birds are naked. The colour of its plumage was reddish grey, spotted with black. It had three black longitudinal lines on the head and at the back of the neck.

The Ostrich is an inhabitant of nearly all parts of Africa, from Barbary almost to the Cape of Good Hope; and it delights principally in arid and sandy deserts. It is likewise very common in Arabia, and is sometimes, though rarely, found in other parts of Asia.

These birds traverse the deserts in great troops. The Arabs pursue them on horseback, and sometimes with dogs; and they occasionally catch hem by means of nets and other snares. Those

that are taken alive are easily tamed: they will allow men to mount on their backs; but they are by no means so easy to be guided as a horse.

There is, at this time, in the Menagerie at Exeter 'Change, London, an Ostrich, from the island of Goree, which is supposed to be the largest that has ever been brought into England. Some years ago, there were, at the same place, a very fine pair of these animals, which had been caught in Barbary. The caravan containing these ostriches was travelling between the towns of Gainsborough and Brigg, in Lincolnshire, when a tremendous storm of thunder and lightning came on. The affrighted horses galloped off at full speed, (owing in a great measure to the negligence of the driver, who was riding on the shafts) and, overturning the caravan, killed both the birds.

Mr. Pidcock ordered the body of one of them to be opened; and there were found, in its gizzard, among other things, between forty and fifty half-pence, several nails, some glass, and a considerable quantity of small pebbles, which had been thrown into its cage, when travelling in different parts of the country. They were all covered with a greenish kind of matter.

In the rotunda of the Leverian Museum, near Blackfriars bridge, there were two excellent spe-

cimens of the stuffed skins of ostriches, the one a male, and the other a female.

The flesh of the old birds is hard, and not well flavored; but that of the young ones, when they are fat and in good condition, is said to be very delicate. Hennequin informs us that the negroes of Senegal are fond of the flesh of the old ostriches, never pursuing the animals on account of their feathers, but only as articles of food. Hennequin, speaking of his own party, says, that they willingly gave up the hares, in order to live on the flesh of these birds. There was formerly, in Abyssinia, a race of people who were called by the ancients *Struthiophagi*, from the circumstance of their chiefly living on the flesh of these birds.

The skin of the ostrich, ornamented with the feathers, serves some of the tribes of the Arabs to make shields and breast-plates. It is well known that the great feathers of the wings and tail are employed in Europe as ornaments for dress, furniture, &c. and they have been used for that purpose from the remotest period of antiquity. The Roman soldiers wore these feathers in their helmets.

The Arabians esteem the coagulated blood of the ostrich, mixed up with fat, as an excellent species of food.

The ostrich, inhabiting some of the countries

that were most anciently peopled, is consequently one of those animals which have been known and celebrated from the highest antiquity. It is frequently mentioned in the Old Testament; and in the book of Job, particularly, it is spoken of with great precision. Herodotus was the first of the Greek writers who noticed it; but those who followed, were so exact in their accounts, as to have left very little for the discovery of the moderns.

The Romans had ostriches frequently exhibited in their games, among other singular and remarkable animals from Africa. They were often served up at the tables of the emperors: it is said that Heliogabalus sometimes had dishes at his table wholly consisting of the brains of these birds.

There are many engravings of the ostrich; but few of them can be considered as at all good.

Those of Aldrovandus, Gesner, and Jonston, are by no means correct in their proportions; and they are likewise incorrect in having the toes equal in length, and a nail on the small toe.

The figures of Buffon do not give a correct idea of the true disposition of the feathers: the colored plate, No. 457, is particularly bad in this respect. That of Brisson, made from the same individual, has likewise the same defects.

Those of Willughby and Brown have the head

too large, probably from the circumstance of their having been taken from young animals: in that of the latter, the colour of the neck and legs is bad.

In the engravings given by Latham, the feathers are not well expressed, and there is a nail to each of the small toes.

CAMELUS BRACTIANUS. Lin

CAMEL.

Published March.1.1800 by R.Phillips, Bridge Street, Blackfriars, London.

THE BACTRIAN,

OR

TWO-HUNCHED CAMEL.

ALTHOUGH the animals of the camel tribe are placed in the same order with the ruminants, they differ from these in several essential particulars. Their toes are not entirely covered with horn: they have only a small nail at the anterior extremity, and a kind of callous sole which, although it admits of a hollow betwixt the toes, is of such a nature as neither to allow them to separate from, nor approach nearer to each other. The Camels have not, therefore, an entirely cloven hoof, but have their toes only divided above and in this respect they have some alliance with the horse. They likewise somewhat resemble this animal in the structure of their teeth. There are eight teeth in front of the lower jaw; but the external ones on each side being pointed are denominated canine teeth, consequently the remaining set only are incisors. In the upper jaw they have two incisors in the intermaxillary bones, which is not the case with any other ruminating animals, and one or two canine teeth on each side, which, by age, become of large size.

They have one stomach more than other ruminants. This is in fact a kind of appendix to the paunch, and contains a quantity of water, which the animals cause to flow from thence into their mouth when urged by thirst. It is this peculiarity of structure which renders the Camels so valuable for traversing sandy and burning deserts. In other respects their intestines are similar to those of ruminating animals in general.

The external conformation of Camels has something unpleasant and forbidding. Their heavy pace, the length and curvature of their neck, their cloven lip, the protuberance of their eyes, the apparent weakness of their hinder parts, and the large fatty lumps which disfigure their back, render their appearance in some measure even hideous.

There are two principal species, of each of which there are likewise several varieties.

The first, was known to the ancients by the name of *Bactrian Camel;* and the other by that of *Arabian Camel.* The latter is likewise called *Dromedary,* from the Greek word δρομας, which signifies a *courier.* As to the name of Camel καμηλος, it is the same as that by which the animal is now known in the oriental countries.

The *Turkish* or *Bactrian Camel* is distinguishable at first sight, by the two lumps on the upper

part of its body. One of these, which is situated on the shoulders, usually falls somewhat on one side when the animal is fat, and the other, which is situated at a little distance behind, is generally upright. This species is usually larger than the dromedary; its legs are shorter in proportion to the size of its body, its pace is more slow, its muzzle larger and more swollen or inflated, and its hair more brown.

The Bactrian Camel is, at the present day, found in the same places where it was observed by the ancients, namely in Usbec Tartary, which was the ancient Bactria. It is likewise found in Thibet, and near the frontiers of China. Professor Pallas assures us that there are in the neighbourhood of China, wild Camels, which are larger and much more courageous than those bred up in confinement.

The animals of the present species are exclusively employed as beasts of burthen throughout the whole of these regions. They are capable of supporting even a more rigorous climate since the Mongol Tartars have conveyed them even to the environs of the lake Baikal, in Siberia, where they subsist, during winter, on the bark and tender branches of the birch and other trees; a kind of food on which, however, they become lean and much emaciated. On the contrary, in the southern parts of Persia, in Arabia and Egypt,

the Camels employed in labour are those which have only a single hunch: whilst those with two hunches, are reared merely as objects of curiosity.

The Bactrian Camels are in every respect better adapted to live in temperate climates than the Dromedary; and particularly it has been remarked that they are much better able to pass through humid and marshy countries than these.

It is said that the Bactrian Camel, when irritated, will sometimes seize a man in its teeth, and, forcibly throwing him upon the ground, will trample him to death with its feet. If, however, the clothes that the man wore be put in its way, the animal is contented by venting its fury on these, and the offender may then, without any risk of injury, approach it as usual. It is in the rutting season that the Camel is most furious, and at that time the slightest irritation will provoke it almost to madness.

These animals have been introduced into Jamaica and Barbadoes; but as the inhabitants were ignorant of the proper modes of breeding and training them, the importation has hitherto been of no service. In Tuscany they have been more fortunate. The grand duke, Leopold, afterwards emperor, sent for some, and in the course of a very few years, they multiplied almost to two hundred. If the duke Salviali, who possessed a stud of camels, had not sold

them so dear as he did (at forty louis each), they would at this time have been multiplied by the people to great numbers, for the Bactrian Camel's utility was well known.

Camels kneel down both to be loaded and unloaded. Their baggage is fastened to a kind of saddle; and one man is able to conduct five or six camels.

Most other beasts of burthen, such as horses, mules, &c. will travel and live with Camels. The Camel and the ass may sometimes be seen employed in the same work. The antipathy, therefore, which has been supposed to exist betwixt Camels and other quadrupeds is unfounded.

In the Menagerie of the Museum of Natural History at Paris, there are two Bactrian Camels, which are now supposed to be about forty-four years old. They are both males, and are about six feet and a half in height, at the shoulder. They are sometimes employed in drawing a chariot, but as they have been long out of the habit, they are never employed in labour. They consume every day about thirty pounds weight of hay or lucern, but are not allowed any oats. The Camel costs no more for its support than a horse, although it is a much stronger and more powerful animal. When these animals ruminate, they macerate their food alternately on each side;

of their mouth, never doing it twice successively on the same side. During the summer they each drink four pails of water every day.

Betwixt the months of November and March, they become thin and much emaciated. They now eat a considerable quantity of their litter, and not more than about sixty pounds weight of hay during the whole three months. Water mixed with a small quantity of flour and salt is given to them. Their odour is almost insupportable. In the first days of this season they have a great perspiration which lasts about fifteen days. When this perspiration has passed off, a running commences behind their ears, not by any particular orifice, but in a general exudation across their nape. The fluid is black, viscous, and very fetid; and it fouls the hair of the adjacent parts in such a manner that it is necessary to cut it off. In the summer time, when the heat is very powerful, a reddish kind of fluid oozes from the same place. They are now very ill tempered, and even in great measure untractable. They attempt to bite, and beat violently with their foot: they do not kick, and it is only with one of their feet that they beat.

Immediately after this season is passed they begin to moult or shed their hair. The hair of their neck adheres together in great flakes, as if it had been felted. In less than two months

the body becomes entirely naked. The skin is then covered with a kind of farinaceous efflorescence, which is taken off with a comb, and it then appears black and smooth like that of a mulatto.

This complete nakedness lasts about two months, at the end of which time the hair begins to return, and in the course of the ensuing month it attains its former length.

Camels delight in lying down and rolling themselves in the dust. During the season just mentioned they are almost constantly employed in rubbing themselves against different objects, and particularly their head. They carry their noses near the ground, like hounds when on scent after any animal they are pursuing.

They sleep with their eyes open.

We have here entered very little into detail respecting the habits of life, instinct, education and uses of the Bactrian Camel, since they very nearly resemble those of the dromedary. These are consequently reserved in order to avoid repetition till we come to speak of that animal.

The following is a short sketch of the principal and most singular parts of the anatomy of the Camel, extracted from the writings of Daubenton.

It has already been remarked that the Camels belong to that order of animals called ruminants, or such as remasticate their food. They consequently have four stomachs, namely the *paunch*, the *reticulate*, the *plicous*, and *digestive stomach*. The first of these stomachs is the largest of the whole. To this stomach is attached a kind of bag, which Daubenton regards as a fifth stomach, and calls the *reservoir*. It is cellular, and the cavities which are betwixt its membranes are capable of containing a considerable quantity of water, which the animal can eject into the paunch by a compression of the muscles of this reservoir, or of those of the abdomen, for the purpose of aiding in the mastication of its food during long journeys over the deserts. This second stomach has no net work on its interior parietes, and consequently only serves as a passage for the food which the animal has eaten. The third or reticulate stomach has prominences like that of other ruminants; but these do not present the same asperities as are to be observed in that. The fourth or plicous stomach is of considerable length, and in its form has greater resemblance to an intestine than a stomach. Its membranes form transverse wrinkles, and its interior surface has a great number of folds, which have no papillæ, and which are all nearly of the same breadth.

The fifth or digestive stomach is not further remarkable on its exterior than by its considerable curvature and inflation. It has within about sixteen folds very different from those of the plicous or fourth stomach. From its parietes there issues a liquid similar to that which is found in the digestive stomach of the ox.

The cavity of the paunch is divided by numerous partitions, which form, in its interior, cells of different magnitude and dimensions. The reservoir has cells somewhat similar, but disposed in such a manner, that they retain the water, but have no communication with the aliments which pass without interruption from the paunch to the reticulate stomach. The Arabians are well acquainted with the nature and use of this reservoir; and when they are reduced to distress from want of water, they frequently stab one of the camels in the caravan, for the purpose of extracting the water from this very singular kind of cistern.

We shall not follow Daubenton through the whole of his observations, but shall content ourselves by remarking, that camels have no gall-bladder: that the tongue is rough with papillæ of different sizes, some of which are directed forward, and others backward, and that near its root there are large cup-shaped glands. The palate

is crossed by twelve irregular furrows, the bones of which form a range of large tubercles.

The teats are four in number, two on each side of the groin.

The internal organization of the Bactrian Camel and the dromedary is in most respects the same.

Buffon, Linnæus, and all other

THE DROMEDARY.

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THE DROMEDARY,

OR

SINGLE-HUNCHED CAMEL.

THIS animal was known to the ancients, by the name of the *Arabian Camel*; at least it was so called by Aristotle and Pliny, in contradistinction to that with two hunches, which they denominated the *Bactrian Camel.* The Arabians have employed it from time immemorial, and have conveyed it into all the different countries where they have established themselves; namely into Syria, Babylon, and into all the countries which extend along the boundaries of Africa, from Abyssinia to the kingdom of Morocco.

There is of this species a race or variety which is smaller and much more rapid in the course than the other, and which has, in Arabia, the name of *Maihari* or *Raguahil.*

Diodorus and Strabo have called it καμηλος δρομας or *Courier Camel*, from which the moderns have taken the name of *Dromedary.* This they have extended, contrary to its etymology, and contrary to the practice both of the Greeks and Arabians, to the other variety. And in this extended sense it has been adapted by Buffon, Linnæus, and all other naturalists. In

order that we may not lead to any misconception in this article respecting it, we must remark that we shall likewise apply the word in its general sense, and connect it to both the races.

The Dromedary, and particularly the Dromedary of Diodorus, is of a smaller size than the common Camel. It should, however, be remarked, that Du Halde speaks of a small race of Camels with two hunches, which are found in some parts of China; but these have not hitherto been described by naturalists.

Dromedaries are from five to seven feet in height at the shoulder. Their hunch or lump is situated on the middle of their back; it is rounded and permanent, during their whole life. Their muzzle is less inflated than that of the Camel: their hair is soft, woolly, and very unequal: it is longer on the nape, under the throat, and on the hunch than on any other parts of their body. Whilst they continue young, its colour is a dirty white; but that of the adult animals is a reddish grey, of a tint more or less dark. Like the Camels they have naked callosities on the upper parts and knees of all the legs, and one much larger than any of the others, on the breast. It is on these callosities that the Dromedaries lie down, and M. de Buffon has asserted that they are gradually produced by the contusions which the animals receive against the ground.

This writer likewise asserts, that even the hunches on their backs are the consequence of slavery, induced by continual friction in carrying heavy burthens; and that they have acquired a fifth stomach, which forms a reservoir for water, from the circumstance of a forcible dilatation of the membrane of this viscus. These, he says, have all been gradually induced through a lapse of many ages, till at length they have become natural to the species.

It is certain that slavery and education have very great influence on the general structure and habits of animals. In the present case, however, it is impossible for us to agree in the opinions of this illustrious naturalist. We cannot by any means suppose that these conformations should be found in the Camel tribe alone, and that nothing of the same kind should be observed in other beasts of burden, which, as well as they, are constrained to a hard and continued servitude. If the continued habit of loading Camels with heavy burthens, has been the cause of those fleshy and glandulous bodies which we remark on their backs, and which have been considered from immemorial generations, as the distinguishing characteristics of the species; why are there not similar bodies on other animals, which have been reduced into the service of men from a period likewise beyond all remembrance or tradition?---

Why should the Camels of Persia or Tartary, and those of Arabia, although employed in the same manner, and receiving a similar education, have any difference in the number of their lumps?---- Why should the former have two, and the latter only one of these bodies?

The Indians employ a species of the ox tribe for the purpose of carrying their burthens; and in these animals there is no greater inequality on the upper part of the body than there is in our common domestic oxen. The bison, on the contrary, which is seldom or never trained to labour, is found even in a wild state, with a lump of considerable elevation in its back.

The callosities on the different parts of their bodies may perhaps be considered as not natural to the species, though it is well ascertained that all the animals, in domesticity, have rudiments of them when brought into the world.

With respect to the fifth stomach, as it is usually called, in which the animals preserve water for several days, entirely separate from their food; we may observe, that its cells are so numerous, and its partitions, valves, and whole apparatus, so complicated, and at the same time so perfect, that it is impossible for any one, who has attentively examined it, to conceive for a moment, that it could have been formed by a simple membranaceous expansion.

In the general internal structure there is no important difference between the Dromedary and the Camel.

It has not yet been ascertained what country gives birth to the Dromedary in a state of nature. Some writers assert, that the wild animals have been seen on the southern frontiers of Siberia, and towards the borders of China; but it is by no means certain that these are not the descendants of individuals which have escaped from slavery.

There are no domestic Dromedaries to be observed in countries so far northward as the Camels. The Persians hold them in much less estimation, and scarcely any are bred toward the north of the Persian dominions. All the Camels of Tartary have two hunches. Neither of the species are employed in India, nor in Africa, much to the south of Senegal.

Of all domestic animals, this is by far the most important and necessary in the countries inhabited by the Arabs. If the Dromedary did not possess an astonishing degree of temperance; if it had not the power of supporting thirst for a great length of time, and of traversing with rapidity immense distances, over deserts covered with a deep and burning sand, there could be no communication whatever between Egypt and Abyssinia, between Barbary and the countries situated beyond the great desert, between Syria and Per-

sia; and Arabia Felix would be perfectly insulated from the rest of the world.

The Moors, in their extensive deserts, rear a great number of these animals; and they are the only kind that is known throughout the whole western part of Africa.

The larger kinds of Dromedaries are able to carry a weight of from seven hundred to a thousand or twelve hundred pounds; and thus loaded they will travel upwards of ten leagues in a day. The lighter animals, which are bred for the course, and which do not carry burthens, will even travel thirty leagues, in this time, if the country is level and dry.

They are prepared for the course by being trained to run with horses from the earliest possible period of their lives. The Moorish horses are very quick in their paces, and, in a race with Dromedaries, they always gain ground considerably at the beginning. After some hours, however, the horse becomes exhausted with fatigue: he is obliged by degrees to slacken his pace, and finally to stop. The Dromedary pursues his route, and is capable of continuing his exertion for nearly twenty-four hours; and he can resume this three or four successive days. On these occasions he is fed with balls formed of a paste of millet mixed with gum. Each animal commonly receives three of these balls in the morning, and

three in the evening, the weight of which in the whole is only about two pounds. This scanty supply of food, a kind which is seldom employed except on such extraordinary exertions, is sufficient for the support of the animal during the whole twenty-four hours, and sustains all his faculties in full vigour.

The Dromedaries employed in conveying burthens are each led only by a simple halter; but those that are used for the course, and are necessarily mounted, are guided from the back, and have a ring or buckle passed through the skin above the nostrils, where it always remains: and to this are affixed the reins by which the motions of the animal are regulated. The Arabs frequently put on the backs of the Dromedaries a kind of osier frames, covered with linen, and by means of these they are able to convey their wives and children, in their migrations from one habitable part of the deserts to another.

Dromedaries as well as Camels are altogether useless in rocky and mountainous countries, but particularly in such as are wet or marshy. The humidity makes their legs swell, and is frequently the cause of their suddenly falling.

Both the species, however, will travel for eight or ten days successively, over arid deserts, supported only by the few dry and splenous plants which are there produced. When the journey is

continued for a longer time than this, it is necessary, in order to keep the animals in good condition, to feed them also with barley, beans, or a small quantity of dates; or a few ounces, every day, of a paste made with the flour of millet mixed up with gum, already mentioned.

If this be neglected, the animal of necessity slackens his pace from fatigue, he becomes lean and emaciated, and his hunch diminishes by degrees, till at length it almost entirely disappears. The two-hunched Camel is not able to support abstinence by any means so long as the present species.

The Dromedary, according to the accounts of most travellers, can pass seven or eight days without drinking; but Leo Africanus says fifteen. After an abstinence so long, it is able to smell water at an astonishing distance; and if there happens to be any within reach, it will run towards it with great rapidity long before any one can see it. This faculty the animal possesses even in repose, if water has been kept from it for any considerable length of time.

As soon as the Dromedary is about a month old, its owner commences its education. It is separated from its mother, whom it is now only suffered to approach at certain hours in the day.

A portion only of the milk which nature has destined for its support is allowed, and thus from

its earliest infancy it is accustomed to some of those hardships which of necessity attend the remainder of its progress through life.

Shortly afterwards it is made to kneel down at command: its legs are forcibly bent under its body, and it is placed in exactly the same situation that it is compelled to adopt when, in after life, it receives and discharges its burthen. The owner covers its body with a carpet or a piece of a tent, by which only its head and neck are left at liberty; and in order to confine it in such manner that it cannot by any force of its own, move from the place, a great number of heavy articles are put on the borders of the covering. The animal, with very few intervals of relaxation, passes nearly four months in this cruel state of confinement: but the effect of so rigid a discipline is, that the recumbent posture afterwards becomes habitual to the animal.

When they have undergone this punishment, the young animals are all put together into a park or large inclosure, where they are fed by children twice a day, on Dromedary's milk diluted with water. The animals soon begin to know the children employed to feed them, and they assemble round them whenever they appear. The children carry in one hand, the vessel that contains the food, and in the other, a slight

switch, which they strike against the thighs of the young animals.

On receiving this notice, they immediately lie down; and, after a little while, the practice becomes so habitual to them, that they put themselves into their usual posture at only a signal from the switch. In short, the obedience with which the Dromedary adopts this attitude on the slightest notice from its master, and which obedience it retains during the whole of its life, is a circumstance truly admirable.

The Dromedary, like the Camel, has three paces, viz. the walk, trot, and gallop. The first is what horse-dealers would denominate a rolling walk. The animal advances by lifting, almost at the same instant, both his legs on one side, and afterwards both those of the other. This pace is exceedingly fatiguing to persons who are not accustomed to it; and nothing but long practice can render it endurable.

At this pace a Dromedary can easily travel from twelve to fifteen leagues in a day, by proceeding only six hours in the morning, and four in the afternoon; and appropriating the remaining fourteen hours to rest. The equality of pace, and its diminution or increase amongst the whole of the Dromedaries on a journey, are entirely regulated by the conductors; and obedience to the

voice of their leader is a capital point in the education of these animals, whose whole life is passed in extensive travels.

They are fond of music, and it is chiefly by means of this that they are managed. They increase or slacken their pace, according to the song of the Camel-driver, who is always stationed at the head of the caravan. They follow each other, with a pensive and melancholy air, without ever quitting their regular direction; and they pay great attention to the cadence of the driver's song, who, when he wishes to slacken their pace, diminishes the measure of his tune. Sometimes, when occasion requires it, the animals are roused by a few notes rather louder than ordinary, or by a slight whistling, and instantly these trivial notifications are understood and obeyed.

To any person unaccustomed to it, as I have before stated, the motion of a Dromedary is insupportable. Golberry says, "One ought, indeed, to be either an Arab or a Moor, to be able to ride this animal for any distance, while going at a trot. For my part, I could not support the torment of it for a quarter of an hour; all my bones felt as if they were dislocated, and my curiosity was even followed by an attack of a fever. It is impossible to form an idea of any jolting more harsh or intolerable. I had the utmost dif-

ficulty to keep my seat upon the animal, when going at a quick trot."

He informs us that the Moors and Arabs, when their Dromedaries go at this pace, are generally mounted, four at a time, on one animal. They face each other in pairs, and will in this manner perform journies of from sixty to seventy leagues in a day, and continue to proceed at the same rate, for four or five days successively.

These animals, when properly educated and trained, will perform a rude kind of dance to the sound of musical instruments.

Dromedaries are very gentle at all times, except during one particular season of the year, when they generally become furious. It is said that, at this period, they recollect all the ill treatment they have previously received, and that they seldom fail to revenge themselves on the persons who inflicted it, if they now come within their reach. They kick, bite, and sometimes even trample men under their feet. They now almost entirely refuse their food for about forty days; and there appears on the posterior and upper part of the head, behind the ears, two elevations of the skin, forming a kind of core, from the pores of which a thick fluid continues to ooze during the whole season. Two large bladders are thrown at the same time from the

mouth, attended by a very disagreeable rattling in them.

The period of gestation in the Dromedaries is twelve months; and they produce only a single young one each, at a birth. Shaw relates that this, when brought into the world, is blind, which is a singular circumstance in a ruminating animal. It is, at first, about two feet in height; but it increases so quickly in size, at this period, that in the course of about eight days it generally attains the height of another foot. If it is unrestrained, it will continue to suck for about twelve months, and it arrives at its full size at the age of six or seven years. The natural duration of its life is from forty to fifty years.

We are assured by Olearius that the two-hunched Camel and the Dromedary will produce together, and that animals of this mule breed are barren. He says that these mules are more esteemed than either of the original races. In the year 1752, a Dromedary in Paris produced a young one from a male Camel, but it was so small and puny, that it only lived three days.

The flesh of the young Dromedary is as good as veal. The Arabians make it their principal food; and they frequently preserve it for a considerable length of time, in vessels which they cover over with fat. These people are likewise very fond of the milk, which is thick and nourish-

ing, and from which they prepare both butter and cheese.

The hair of the Dromedary is employed in the manufacture of various kinds of stuffs, and for several other purposes. The animals are shorn in the summer: even the dung is of essential use in the arid countries which they inhabit: it constitutes the chief combustible substance that the people possess; and, when properly prepared, it yields a considerable quantity of sal ammoniac.

The Dromedaries, from time immemorial, have formed a principal part of the riches of the Arabian shepherds; and from the number of the animals they possess, is estimated the extent of their riches.

The Egyptian peasants, or *fellahs*, have likewise Dromedaries of which they take great care. They do not employ them in tillage, but only for the purpose of transporting merchandize, and in turning the machines by which they water their fields.

In the menagerie of the museum at Paris, there are two Dromedaries, which were given to the French Republic, when about three years old, by the Dey of Algiers. They were then about four feet and a half high, including the hunch: their hair was nearly white, except on the upper part of the hunch, where it was reddish. They are now about seven years old, and the female is six

feet and a half, and the male seven feet in height. The hair of both the animals is a reddish grey. In Egypt the grey Dromedaries are considered to be the strongest. There are likewise black and white ones, but they are very uncommon.

Their season of moulting commences about the month of April; but these animals do not, like the Camel, lose all their hair, and it is changed in a considerably shorter period than that of the horse or any other animal of our climate. The duration is two months, and the hair of the hunch is that which is last changed. The rutting season precedes that of moulting: it commences in February, and likewise lasts for two months.

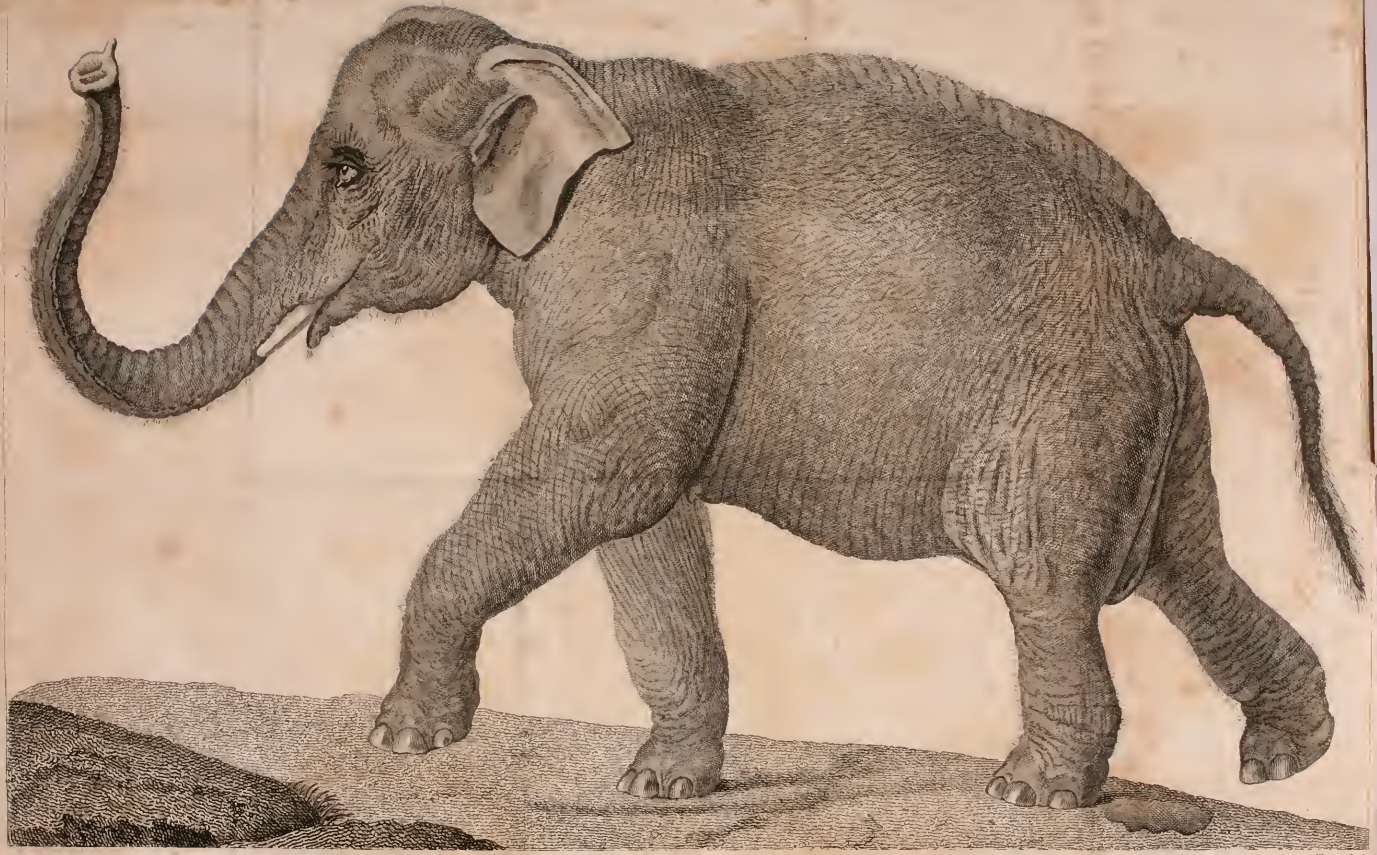
The male has the running behind the ears, which the male Dromedaries have in their proper climates, and the teats of the females are considerably augmented, but neither of them lose their appetite, nor exhibit the other indications that have been remarked in the animals which inhabit the hot countries. Perhaps, however, this may have arisen in a great measure from their not having attained their full age.

The male eats about thirty pounds weight of hay every day, and the female about twenty.---- They drink often.

The female is very gentle, but the male somewhat mischievous; and he attempts to crush those who offend him against the wall or against the

partition of his inclosure. He is sometimes employed in a machine for pumping water, and he performs his work very well. On the days that he is thus employed, he has either a few oats or some bran given in addition to his hay.

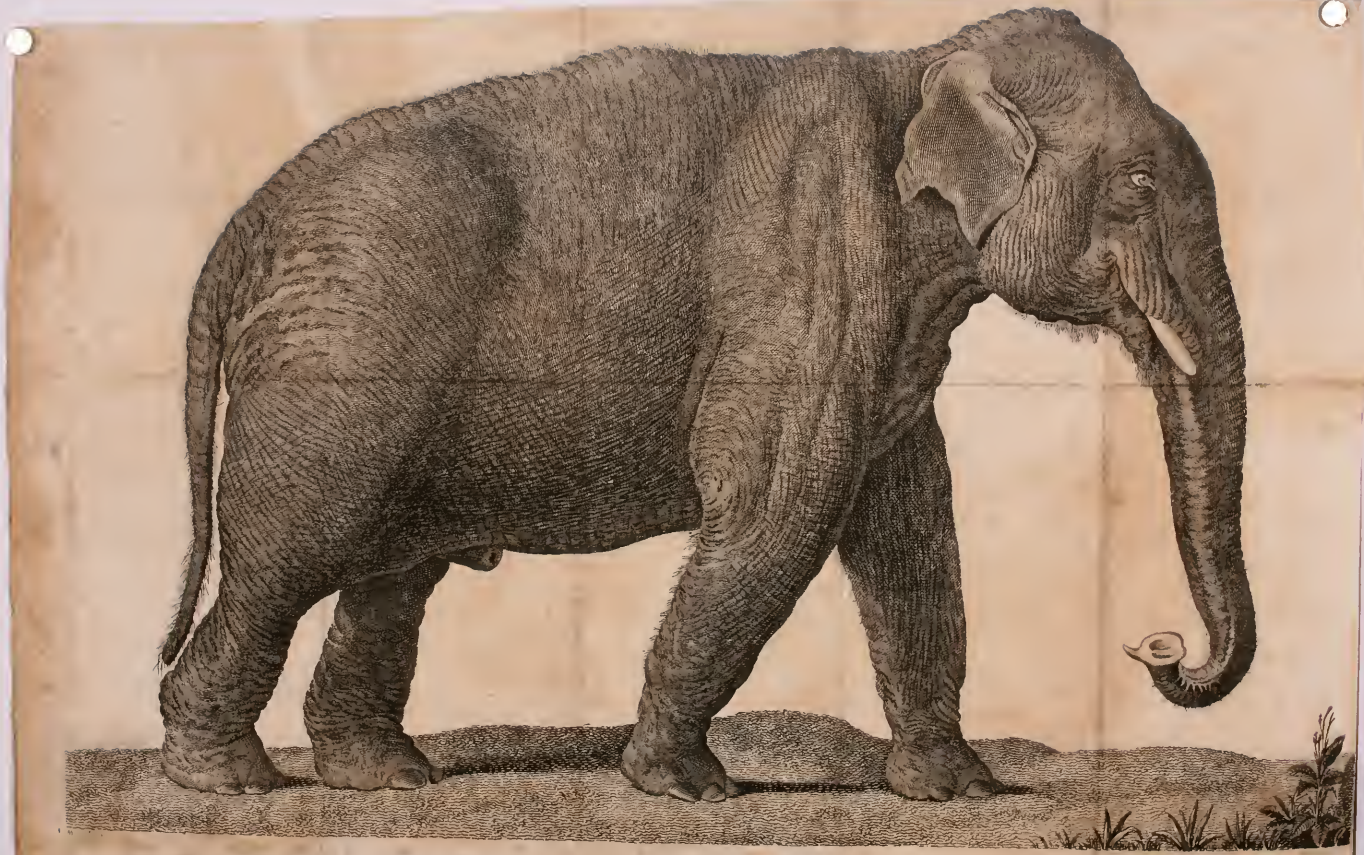
Both the Dromedary and the Camel were well known to the ancients; of the latter, Aristotle has given a memoir of very considerable length, in which, as is usual in his writings, he has avoided most of the errors which have been admitted by his successors.



Warner Fecit

FEMALE ELEPHANT.

Published March 1, 1810 by R. Phillips Bridge Street, Blackfriars, London



ELEPHAS.

INDIAN ELEPHANT.

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THE INDIAN ELEPHANT.

THE Elephants are so different from every other tribe of quadrupeds, that it is difficult to assign to them a proper place in the zoological system, unless we rank them in an order by themselves.

From the circumstance of their having, in the skeleton, five complete, and very distinct toes, they might be supposed to be digitated animals: but these (during life) are each enveloped in a thick and hard substance, which scarcely allows any motion, and which constitute, in appearance, a sort of hoof. On the border of this apparent hoof there are several nails, each situated at the extremity of one of the toes. The molar teeth, composed of vertical and transverse plates, the absence of the canine teeth, the enormous tusks implanted in the incisive or intermaxillary bones, and other particulars of their osteology, seem to give the Elephants some alliance with the *rongeurs* of the French naturalists, or the animals of the order *glires* of Linnæus. These tusks, however, though incisive in their position, have neither the form nor the uses of the long incisive teeth of the glires, since, instead of being

curved downward to meet the incisors of the lower jaw, they are either straight, or somewhat curved upwards; and each terminate in a point. In short they are true weapons of defence, similar in most respects, to those of the hogs. These weapons, (which project from the upper jaw) and the absence of the incisors and the canine teeth, in the under jaw, give the Elephant an alliance with the walruses and manati; but in the other parts of their organization, these animals have nothing whatever in common. The Elephant is peculiarly distinguished from all other quadrupeds by its *proboscis*, a wonderful instrument, which gives to the animal an address, and a nicety of touch superior to that even of the asses, and which is particularly advantageous from the circumstance of its being situated so near the organ of smell; since the animal can examine objects at the same time by both these senses, and seize or reject them according to the judgment formed from this double examination.

As the head of the Elephant is very heavy, and its long and solid tusks, projecting forward, contribute to remove the centre of gravity from its point of support, it could never have been able to elevate this head, if the neck had been at all proportioned to the length of the legs. On the other hand, with a short neck, and long legs, the animal would not have been able to procure

either the food or liquid necessary to its support, had it not been furnished with a proboscis; which consequently is a member indispensable to its existence. This proboscis is formed by a membranaceous prolongation of the tubes of the nostrils, furnished with muscles, and clad, externally, with a strong and flexible skin. The muscles which move it are of two sorts: longitudinal ones, divided into a number of arcs, the convex parts of which are outward, and the two extremities of which adhere to the internal membrane; and transverse ones, which extend from the internal to the external membranes, like the rays of a circle. These last contract the external envelope, without closing the internal canal, which the other muscles would not be able to do: in this action they elongate the proboscis by forcing the longitudinal muscles to extend themselves. The latter, in contracting, shorten the proboscis, either entirely, when they all act together, or in part, and this on one or more sides, and in one or more portions of its length, which produces all imaginable curvatures. The proboscis is therefore a mechanism at the same time the most simple and the most powerful that can be imagined. At its extremity, there is an appendix in form of a finger, which the animal uses chiefly to take hold of very small objects. This proboscis is

so strong, that with it the Elephant can tear up even small trees, can shake buildings, fling considerable weights, and with great ease, suffocate a man by folding it round his body.

Besides the above singularities of organization, the Elephants have several others that are well deserving of notice. Their legs are high and peculiarly strong. The whole sole of the foot is applied to the ground, and is so short in proportion to the animal, that the leg appears to be cut off below, almost like the base of a column. The ears are broad and pendant, very different from those of animals which, from domestication, have pendant ears, such as the dogs; in the latter, the upper part of the valve falls down and covers even the opening of the *meatus auditorius*; but in the Elephants, the ear is widened and pendant by the posterior and inferior part. When the animals are in a wild state, their ears are continually in motion, and are of essential service in defending the eyes from the attacks of noxious insects.

The cranium of the Elephant is larger than what is necessary to hold the brain: the internal of the two parietes is occupied by a great number of cells which communicate with the interior of the nose, and, no doubt, serve to extend the organ of smell. The proboscis itself has no perception of odours: the use to which the ani-

mal applies it, in drawing up liquids, will not, of course, allow the internal membrane to be sufficiently delicate for this purpose. It is therefore, in this respect, only the conductor of the odoriferous particles. There is a line on the middle of the occiput, where the two parietes of the skull meet, and form a hollow, into which is inserted the cervical ligament; this is the only place where the skull can be perforated without much difficulty, and where the animal may be killed by a single stroke with a lance.

The molar or grinding teeth of the Elephant are very peculiar in their structure. Each tooth is composed of a certain number of very thin partial teeth, situated in rows, and occupying transversely the whole width of the tooth. These teeth are all complete, each being composed of a bony substance, and of enamel, and having its proper roots, and the orifices that are necessary to admit of its appropriate nerves and vessels. In the early state of their growth they are separated; but when they are about to pierce the gum, they become united together by a peculiar kind of cement. Each of the gums has, at its summit, several obtuse points: but when they arrive at their full developement, these points are gradually blunted by the friction occasioned in masticating their food. In this wearing away they at first present the appearance of circles of

bony matter, surrounded with enamel; in wearing deeper these circles become obliterated, and instead of them there appear a great number of transverse stripes, which on examination will be found to mark the summit of the partial teeth. Whilst the composite tooth is diminished above, it is lengthened from below, and there are to be observed in the old teeth, long and distinct roots, whilst the new ones have none at all. The manner in which the teeth are replaced is curious. The first molar teeth are only four in number, one on each side of each jaw. After some time four others are developed, not beneath, but behind these. The Elephant has then eight teeth in the whole, but the second teeth, by little and little, push the others forward, till at length they thrust them entirely out of the jaw: there are then, as at first, only four left. At this time two new pairs appear, which, like the others, thrust out those which preceded them. This succession of teeth is repeated no less than seven or eight times during the life of the animal. Each new tooth is larger than the old one, is composed of a greater number of partial teeth, and requires a greater length of time for its developement.

The tusks or weapons of the Elephant have also a structure which is peculiar to themselves. They are composed of conical layers, closely connected one with another, of which the interior

layers are the last produced. At their base there is a conical cavity, the point or extremity of which is elongated into a very straight tube that traverses the middle of the whole length of the tooth, and is filled with a blackish substance. When one of the tusks is cut transversely, the section presents to the sight a great number of concentric circles, formed by cutting through the several layers which compose it; and in the centre is seen a black point (called by workmen in ivory, the heart of the tooth), the section of the longitudinal tube. There are likewise to be observed, numerous lines extending from the centre to the circumference, curved into segments of circles; and crossed by others, similar, that are curved in a contrary direction: these form, by their intersecting each other, a series of very regularly arranged curvilinear lozenges. It is by these lozenges that the ivory of the Elephant may, on the slightest inspection, be distinguished from that of any other animal: nothing of the kind is to be seen in that of the hippopotamus, the walrus, the hog, or the narwal. The external layer has straight rays, directed towards the centre. This is the true enamel; but as it is very little harder than the ivory itself, and as it is soon worn away at the point of the tooth, many writers have asserted that the tusks of the Elephant are entirely deprived of this substance. The first

tusks are cast when they have only attained the length of some inches; but are replaced by others which generally arrive at much greater length. The ivory is of different colours. In some of the tusks it has an olive cast, but it is most commonly either white or whitish. The workmen denominate the former *green ivory*; but this colour is only found in such of the weapons as have been taken immediately out of the jaws of the animals, or in such as have not been kept long enough for the olive tint to be destroyed, in drying, and to be replaced by the white colour.*

The skin of the Elephant is rough and uneven, or wrinkled in all directions, and granulated almost like shagreen. There is very little hair: in the full grown animals, this is observed only on some particular parts of their body; but in the young ones, it is thinly scattered over the whole surface. The skin when washed is generally black, more or less deep, but the real colour is almost always concealed by a coat of dirt and scurf which covers it.

The peritoneum of the Elephant is very thick, but of a loose texture and spongy substance, like almost all its other membranes. The epiploon occupies the posterior part of the ventricle, in

* See this subject pursued further, by Daubenton, in his "Description de l'Elephant.

such manner as to be situated betwixt the intestines and the back. The intestines, and particularly the colon, are extremely large. The stomach however, is small; and the œsophagus enters it about the middle. The liver has only two lobes. The hepatic duct is very large, but there is no gall-bladder.

The general resemblance betwixt all the Elephants, and the difficulty of comparing those of different climates, have, of late years, been the cause of confounding different species under the same name, *the Great Elephant.* It is, however, now well ascertained that there are, at least, two species which are perfectly distinct; that found along the west, and the southern coast of Africa, and that which is so common in the East Indies. These animals not only differ in the general form of their body, but also very considerably in their habits and instincts. Even the ancient writers were not ignorant of this circumstance. Appian says that Domitius, in arranging Elephants for battle, always placed the African Elephants after the others, considering them of less use than these from their being smaller and much less courageous. Pliny also affirms generally, that the animals from Africa are not only of less size, but that they are afraid to combat with those of India. Diodorus says the same thing of the African Elephants, compared with those possessed

by the Egyptians, which no doubt are brought from Abyssinia, and other parts of the eastern side of Egypt, and where there is every reason to believe, the Indian species only is found; since Ludolphus says expressly, that in Abyssinia the females are destitute of tusks. The Indian Elephant has its head elongated, the forehead flat, or even, somewhat concave; whilst the African Elephant has a round head, and a convex forehead. The ears of the former are of a moderate size, whilst those of the latter are so enormous, that they cover the whole shoulder. But what forms a more decisive character is, that the molar teeth of the African Elephant when the upper surface is worn away by mastication, exhibit a lozenge formed surface to each of the partial teeth, whilst the surfaces of these teeth, in the other species, are each somewhat in the form of a waved or festooned ribbon. The tusks of the African Elephants continue to increase in size during the greater part of their life, and arrive at a much larger size than those of the Indian animals: they are nearly equal in both the sexes: whilst the tusks of the females of India seldom exceed some inches in length. The African ivory is likewise harder, and less liable to become yellow, than that from the East Indies; and almost all the ivory brought into Europe is from Africa. It likewise appears that these Elephants

differ in the number of their nails: but this is a character which cannot be depended on, since the number of these is not always constant in the same species.

As the Elephants which have been brought into Europe, and deposited in the French and English menageries, have been those of the East Indies, we shall confine the subsequent observations to this species only.

To this hath been chiefly attributed that astonishing degree of sagacity which has been the subject of such exaggerated relations, as to be considered by some writers, the result of real intelligence and of moral sentiment. This superiority of the Elephant over other animals, is partly founded in the actual advantages that it has beyond them. The perfection of its organ of touch; the facility it possesses of confirming the organ of sight; the delicacy of its organs of hearing and smelling; the length of its life, and the experience and habits it derives from this; its strength and power, which prevents it from being attacked by any other animals, procure for it an uninterrupted repose, and constant security. Yet its external organs, (in every respect so advantageous to the animal) are not animated by a nervous system either more powerful or more delicate than that of other quadrupeds. Its brain is small in proportion to the

bulk of its body: but the cells before mentioned render the skull of large size, and make it appear almost as prominent as that of man. The result of this conformation of the skull is a grave and serious physiognomy, which probably has contributed, in no slight degree, to produce for the Elephant that reputation for reason and intellect which have rendered it so celebrated.

The Malays give to the Elephant the same name that they give to man, and which implies a rational being. The ancients were not contented merely to acknowledge its gentleness, the facility with which it was domesticated, its attachment to its master, its sense of benefits conferred, its resentment of injury, qualities which it possesses in a very high degree, but still, in common with the dog and several other quadrupeds, they elevated it to a much higher rank, considered it as an intellectual being, as in some measure capable of religious worship, as possessing virtues very rare among mankind, an unalterable conjugal fidelity, and an uniform resistance against being the minister of injustice. The Indians believe that they can make the Elephants comprehend whatever they say to them; and that they are influenced by passions similar to those which actuate mankind, such as a love of finery, and even of simple commendation or praise. Travellers, delighted to speak of an

animal so wonderful as the Elephant undoubtedly is, have adopted much too readily the surprising narrations respecting it of these ignorant people, and naturalists have, in their turn, been too eager and credulous in copying the accounts of the travellers. It is certain that the Elephant, as remarked by sagacious and observing men, falls far short of the station in which it has usually been placed by the accounts of those who considered it possessed of intellectual faculties.

This animal, notwithstanding its enormous bulk, does not by any means want quickness in its movements. It trots with considerable agility, and can easily overtake a man at his greatest speed; but as it cannot turn very readily, he is able at any time to escape from it by running to one side. The hunters are able to kill it by attacking it from behind, or on the flanks. It moves its ears as it runs, and sometimes employs them to direct its motions, extending the ear on that side to which it would turn, and presenting thereby a greater resistance to the air. It has great difficulty in descending very steep places, and in this act it is obliged to bend considerably its hind legs, since otherwise it would be overbalanced by the enormous weight of its head and tusks.

The Romans had Elephants which they trained to dance, and which they instructed to run

with rapidity amongst men recumbent upon the ground, without injuring them. It is said that they even taught them to dance upon a rope, a thing scarcely credible, although asserted by several writers, who, in other respects, are worthy credit.

The body of the Elephant being lighter than water, the animal is able, with great ease, to cross rivers by swimming, particularly where the current is not violent. It has thus no need, as the ancients asserted, to walk along the bottom, and elevate its trunk above the surface, in order to respire.

This animal pefers moist and shady situations, in the neighbourhood of rivers, to all other places. It suffers nearly as much from excessive heat, as it does from cold. A continual humidity is necessary, to soften his hard and wrinkled skin, which otherwise is subject to crack and excoriate. The Elephant, therefore, not only throws the water over its body by means of its trunk, but likewise experiences great delight in plunging into the waters, and playing about amongst them; when no water is at hand, it endeavours to supply the place of this by covering its body with dust or herbs.

Its usual food consists of plants, roots, and the young branches of trees. It is particularly fond of the seeds of the bamboo and plantain, of

the banana fruit, and sugar canes, which it devours with great avidity. The inhabitants of Sumatra have learned how to profit by the voracity of the Elephants for sugar canes. They insert a very active poison into the hollows of the canes nearest to the quarter from whence the Elephants usually come; and after the animals have eaten them, they generally fall down on the spot and die.

The natural instincts of the Elephants induce them to live in society: they consequently are observed in immense numbers in the interior of the forests: these they seldom leave, except for the purpose of devastating the neighbouring plantations. Their troops or herds consist of from forty to a hundred individuals of both sexes and all ages. They are conducted by one of the oldest females, and one of the largest males. When they leave the forests, if there is any appearance of danger, they observe a determined order of progress. The young ones and the females are placed in the middle, surrounded by the old males; and each of the females protects her own offspring by embracing it with her trunk.

Some Elephants live in solitude, and entirely apart from society: these are called by the Indians *grondahs*. They are always males, which, it is believed, have been chased from the herds, by the jealousy of other individuals of their sex. They

are, in general, excessively ferocious: they often leave the forests, attack mankind without the least provocation, lay waste the fields, throw down the huts of the peasants, and destroy the cattle. The farmers are frequently compelled to set guards against them, who are posted, for the purpose, in a kind of sentry-boxes, of great strength, formed of bamboo. When the men perceive one of these Elephants approaching, they give the alarm to each other, and drive away the animal by making a great noise, and by firing at it with muskets. When these Elephants penetrate into the villages, they commit the most dreadful desolation. The animals that live in troops are not dangerous, unless they are irritated: a man may pass very near them without in the least degree attracting their notice.

Mankind have continued for a long time ignorant of the mode of production of Elephants. The domestic animals have not till lately been known to produce young ones: and the wild Elephants, during the season that the males attach themselves to their mates, always continue in the depth of the forests, far out of the observation of mankind. This has usually been attributed, by those who have elevated the animals nearly into the same rank with men, to a principle of modesty, or a desire that their offspring shall not be seized and driven into slavery. Thus has imagination sup-

plied the place of those facts which could not be supplied by actual observation and knowledge.---A late English writer, Mr. Corse, has very satisfactorily ascertained that the mode of production in these animals is the same, or very nearly the same, as in the horse; and that this does not take place at any particular season, but during all the seasons of the year. Their period of gestation is from twenty to twenty-two months. The young one when first produced, is about three feet in height. It sucks with its mouth, and certainly not by means of its trunk, as hath been generally believed. In the troops, the young are said to suck, indiscriminately, all the females that have milk in their teats. It has likewise been remarked, that if a young Elephant be carried off from its mother, and kept apart from her for only two days, it will not again be able to recognize her, although it seeks for her, and calls eagerly for the teat by its cries. The young Elephant sucks for two years, and in the first year, it attains the height of about four feet, in the second four and a half, and in the third five. It continues to increase in size till it is twenty or twenty-two years old. The Indian Elephants are in general smaller than what has usually been asserted by travellers: the females are only from seven to eight feet high, and the males from eight to ten: the largest that Mr. Corse saw measured in height, from the

top of the head to the ground, twelve feet two inches. Of a hundred and fifty Elephants employed in the first war against Tippoo Saib, there was only one which was so much as ten feet high. The ancients speak of these animals measuring from fourteen to sixteen feet; and in the Museum at St. Petersburg, there is a skeleton that measures fourteen feet in height: this animal, when alive, was given to Peter the Great, by the King of Persia. The Grand Turk, in the year 1745, gave to the King of Naples an Elephant thirteen feet and a half high.

Elephants first produce young ones at the age of seven or eight years, or somewhat earlier. The greatest age that these animals attain has yet not been ascertained with any degree of exactness: they have, however, been kept in a state of domestication for about a hundred and twenty or a hundred and thirty years: and, from the slowness of their growth, it is by no means improbable that, in a wild state, they may outlive a couple of centuries.

The milk tusks are shed in about twelve or thirteen months: those which succeed them do not fall, but in the Indian Elephants continue to increase in size during life. There can be little doubt that the opinion advanced by Ælian, and copied by several modern writers, that these Elephants changed their tusks from time to time as

the stags do their horns, is incorrect, and founded on observations made on the African species.

The largest tusks that are seen in Bengal do not often exceed the weight of seventy or eighty pounds: but there was one in the Leverian Museum, probably however from the African species, that weighed a hundred and thirteen pounds.

The first grinders begin to appear about eight or ten days after the young animal is produced: they are not perfectly formed till the end of six weeks or two months, and not completely out of the jaw till the expiration of nearly three months. The second grinders appear in about two years; the third soon afterwards begin their developement: they push out the second grinders in the course of six months; and, in their turn, are driven out by the fourth, when the animal is about nine years old. There are other similar successions of teeth, but their particular periods are unknown. It is, however, believed, that each succeeding tooth requires one year more for its developement than that which immediately preceded it. The first grinders are composed of four laminæ or partial teeth, the second of eight or nine, the third of thirteen or fourteen, the fourth of fifteen, and in the same proportion as far as the seventh or eighth, which has twenty-two or

twenty-three: this is the greatest number that has been observed.

In the Indian Elephants there is considerable variety with respect, not only to size, but also to colour, and the length of tusks. Their natural colour is a blackish brown, which usually becomes a dirty grey, from their skin being covered with scurf and dirt. Sometimes, in the woods, an Elephant is seen whose colour is reddish, owing (says a late traveller) to a sort of red clayey earth in which it has rolled itself. White Elephants derive their colour from the same kind of disease which makes the *Albinos*. They are greatly revered by the Indians, who all believe in the transmigration of souls: according to their belief these Elephants are animated by the souls of their ancient kings.

We have already remarked that the females of the Indian Elephants have very short tusks; and there are some males which have tusks not longer than these, for which no reason can be alledged. Such Elephants are denominated *Mookna;* and those with long tusks *Dauntelah*, from the Indian word *daunt*, which signifies the same as our word *tooth*. This difference in the length of the tusks does not make any in the price of the animal. If the character of the Elephant is well ascertained to be good, the Europeans rather pre-

fer those which have short tusks, since they are thus deprived of the means of being so dangerous as they might otherwise be. The Indians, however, always prefer the long tusked animals, careless of the risk of injury.

There is a great variety amongst the *Dauntelahs*, arising from the direction and curvature of their tusks. The animals most esteemed are those which have them nearly horizontal. The Indian princes have a peculiar and superstitious respect for such of the *Dauntelahs* as have only one tusk.

A very important difference, with respect both to price and utility, arises from the animals being what are *Komaréah* and *Merghée:* the former are Elephants which have a thick and long body, and short legs: they are stronger than the others, and able to withstand fatigue for a longer time, and consequently are the highest in esteem: the others are taller, shorter in the body, and have higher legs. Betwixt the two there are many intermediate degrees. All these varieties are found indifferently in the same herd.

The Elephants, as before observed, very rarely produce young ones in confinement. Those animals, therefore, that are chiefly domesticated in the East, are either such as have been caught from the wild herds, or such as have been produced from females that were with young previously to

their being caught. In India they are taken in two ways, in troops or singly: a whole troop is sometimes caught by surrounding them with a great number of armed men, arranged in two circles, who frighten the animals by shouting, beating a kind of drum called tomtoms, and firing at them with muskets loaded only with powder: thus preventing them from going in any other direction than that in which they wish them to proceed. By these means they are driven into an inclosure, surrounded by deep ditches, and palisadoes of such strength, that all the force they can exert will make no impression on them. The entrance to this inclosure is planted with trees and shrubs, so as to resemble the pathway into a forest. The Elephant that conducts the herd hesitates, however, a long time before he can be induced to enter it; but the moment he goes in, all the rest implicitly follow him. The gate is then closed, fires are lighted, and the same noises are made as before, till the animals have passed through into the interior inclosure. Nourishment is now offered to them, from a scaffold placed near the entrance of a long passage into which they are drawn, one by one, and which is so narrow, that they are not able to turn round. As soon as one of them has entered this passage, the place is closed by a gate, and the animal is now confined to the spot by bars that are passed across.

both before and behind it. Its feet are secured by ropes, interlaced by a man who approaches from behind. Other men on the scaffold pass strong cords round its head and body, the ends of which are made fast to two domesticated females, properly instructed for the purpose; and it is afterwards rendered perfectly tame and familiar.

It is not necessary to make the above preparation for the taking of single Elephants; since, as they are always males which have been driven away from their herds, they are attracted into the snare, without much difficulty, by tame and well trained females. Men pass betwixt the legs of these females, in order to approach and tie with ropes the legs of the wild animal. If any accident happens to rouse the animal, they mount, as quickly as possible, the backs of the females, by means of rope ladders, fastened to them for that purpose, and escape. But they are generally able to tie the Elephant, and afterwards fasten him to the trunk of some stout tree to which the females attract him.

In whatever manner the Elephants may be taken, their education is precisely the same.--- Each is given to the care of a keeper, and other servants, who habituate him to bondage, by a judicious mixture of caresses, indulgences, and threats, by scratching him with long bamboos, throwing water over him, and giving or refusing

his proper food. Sometimes they are compelled to have recourse to chastisement, by beating him with staffs pointed with iron. The keeper approaches him by degrees; and at length the Elephant allows him to mount on his neck, from which place the man is able, in a short time, to direct all his movements. Six months generally elapse before the animal attains this degree of docility: but for some time after this they cannot be perfectly depended on; and when an Elephant is determined to escape, all the efforts of his keeper to detain him are in vain. The male Elephants, and particularly those that are taken alone, are always less tractable, and require more severity than the females.

It is asserted of the Elephant that, when it has once escaped from slavery, it cannot be a second time ensnared. But late writers have recited several instances which prove that this is not the fact.

This animal is one of the most useful that has been reduced into the service of mankind. Its strength is so great that it is able to carry a weight of nearly two thousand pounds. It will draw a burthen which six horses are scarcely able to move; and it will travel, without fatigue, fifteen or twenty leagues in a day, and, on an emergency, it may be urged to more than thirty. To these advantages are to be added all those which

are the result of its sagacity; as its retracing by itself a road along which it has travelled; the surprising resources that it adopts in its embarrassments; and those derived from its general quickness and address, and from the peculiarly excellent formation of its proboscis. Every one knows that formerly it was employed in war, that it charged the soldiers, and, in Eastern countries, had generally an important place assigned to it in battle: but the adoption of fire arms in late centuries, and its natural and unconquerable dread of fire, prevent it from being at present of much further use than in transporting provisions, baggage, and artillery.

In a state of domestication, the Elephant requires for its support about a hundred pounds weight of rice per day, and a considerable portion of fresh vegetables or fruit. One that was kept in the Menagerie of Versailles, about the end of the seventeenth century, had a daily allowance of eighty-four pounds of bread, twelve pints of wine, two pails of pottage, two of boiled rice, and one sheaf of corn. It was fond of spirituous liquors of all kinds, and these were always given to it by the keeper as a kind of bribe to induce it to exert the greatest efforts of its sagacity.

A male Elephant that was brought to England in the year 1793, and purchased by Mr. Pidcock of Exeter 'Change, London, was usually fed with

hay, straw, and vegetables of different kinds. He drank about nine pails of water in the day, besides a very considerable quantity of ale that was given him by different visitors.

The two Elephants in the Menagerie of the Museum of Natural History in Paris, consume at present about a hundred weight of hay, eighteen pounds of bread, several bunches of carrots, and a great quantity of potatoes, every day, without reckoning the food that they receive from the numerous persons who come to see them. They have no particular hours of eating, but will receive food at all times, except during those of their repose. In summer they drink nearly thirty pails full of water each.

In the year 1801, these two animals were each about eighteen years old, and measured, in height, about eight feet four inches; and they had increased a foot and a quarter since their arrival in Paris. When they were first brought into Europe, in the year 1786, they were only three years and a half old, and three feet six inches in height. At that time they only ate twenty-five pounds of hay per day, each.

They were produced in Ceylon, and of the largest race of Elephants. The Dutch East India Company presented them to the Stadtholder; and on the conquest of Holland by the French, they were conveyed from that country, with other cu-

riosities, to Paris. They were carried as far as Nimeguen by water, and from thence were driven on foot to Loo. It was very difficult to prevail with them to pass the wooden bridge at Arnheim, being afraid that some snare was laid for them; and, at last, this was done, by keeping them, for a considerable time, without food, and then inducing them to advance by presenting their accustomed nutriment on the opposite side of the bridge. In crossing it, they previously examined the solidity of each plank, before they ventured their weight upon it.

They were very tame all the time they were kept at Loo, and were even suffered to range about at large. They entered sometimes the apartments, and during dinner, would receive food from any person who offered it. But, after the conquest of Holland, from being treated with considerable cruelty by many of the persons who came to see them, they lost a great portion of their natural gentleness. Their confinement, and the pain they suffered in the cages employed for conveying them to Paris, had the effect of further changing their nature. In the Museum of the latter place they are confined in an inclosure sufficiently large to allow them some exercise: this contains a bason or pond for them to bathe in, and their stable. Their rapid increase of size.

proves that they enjoy, in this situation, an excellent state of health.

These animals have the tenderest attachment for each other; whenever either of them testifies any degree of alarm, the other immediately hastens to its assistance. This is always the case when they are struck by the appearance of any object which is new to them: they then run from one side to the other, utter their peculiar kind of noise, and caress each other with their trunks. On these occasions the male exhibits signs of ardour, to which he is usually a stranger. These emotions were never more striking than when, on their first arrival in Paris, they were put together after their long separation. They immediately rushed towards each other, and sent forth cries of joy so animated and loud as to shake the whole place into which they were put.

These animals make three kinds of noises: one with the trunk, which is shrill, and seems only to be exerted during their playful moments: one more weak, with the mouth, by which they demand their food; and a third, very violent, from the throat, which they exert only on occasions when they are agitated by fear or passion. This last is truly terrible.

They are for the most part very gentle, and do not attempt to injure any one. They acknow-

ledge their keepers and exhibit considerable affection for them: but, at a certain season of the year, when he is at heat, and a liquid begins to run from the glands situated behind the ears of the male, he becomes mischievous, the keepers are obliged to be careful not to ill-treat him, and he even strikes at the other elephant with his trunk. This running first began when he was about fifteen years old. It is not known whether the female has a secretion of liquid behind the ears or not: she has, however, orifices similar to those of the male. It lasts for forty days, then stops for forty days, and begins again. The humour produced is viscous and fetid. It is during the last days of the running that the animal is most mischievous and ill-natured: he then refuses in a great measure to eat, taking proportionally to other times, a very small quantity of nourishment. His refusal of food is known to be a sign of the running being about to cease.

The male Elephant, beforementioned, as possessed by Mr. Pidcock, the proprietor of the Menagerie at Exeter 'Change, was taught by his keepers to perform a great variety of tricks for the entertainment of the visitors. If a pot of ale was brought to him, he would put the extremity of his trunk into it, and, sucking up the liquor, would afterwards blow it into his mouth: this done, he would make a motion with his head,

which the keeper always took care to tell the donor, was the animal's mode of expressing gratitude for the gift; and which probably the major part of the spectators believed to be really the case. He would take up a watch or even the smallest piece of money from the floor, and on command, would put it again into the owner's hand or pocket. He would take from any person a piece of money, and give it to a boy (who attended for the purpose) for bread, fruit, or vegetables, which he immediately ate. If his keeper ordered him, he would unbolt the door of his den, or untie, with the finger at the extremity of his proboscis, a piece of strong cord that was fastened to the door. When the keeper has been engaged in sweeping the den, the imitative animal has not unfrequently taken in his trunk another broom, and has appeared highly delighted in attempting to sweep the place after him.

In the month of August, 1798, whilst a considerable part of Mr. Pidcock's collection of animals was at Lancaster, for the purpose of exhibition, several sailors, (who had lately arrived in a small fleet from the West Indies,) being intoxicated, came to the carriages in the night, and began to demolish them. The keeper, who was roused by the noise, went out, and reprimanded the sailors for their outrageous conduct. This had no effect in influencing them to desist; but in re-

turn they began to illtreat the man. His cries reached the ears of the Elephant: as soon as the animal recognized his voice, he burst open the door of his den, and immediately came out to the keeper's assistance. The moment, however that the sailors perceived him, they all ran off, and little mischief was done. This animal died in the year 1803.

There is at this time a female Elephant at Exeter 'Change, which was brought to England in the Rockingham East-Indiaman, and landed on the 6th of January, 1796. At the time of her arrival she was not much bigger than a large hog, but she has now attained her greatest size. She was considerably more thick and fleshy both in the body and limbs than the male, and her head, in proportion, was somewhat larger. She is a remarkably fine animal, and has small, but very expressive eyes. Her skin is brown, rough, and thinly scattered with hairs or bristles. Her tusks are short; and her teats are very visible on the breast, a little beyond the fore-legs. This Elephant, by some secret signal given from the keeper, will, at his order, beat as many times with her trunk against the rails of her den as there are persons in the room: and, in the same manner, will beat the hour, after the man has held up a watch to one of her eyes. She will take off his

hat, and again put it on as often as she is commanded: she will lie down, and rise up again: will unbolt and bolt the door of her den, whenever the keeper orders her to do so. In unbolting and bolting the door, it is to be remarked, that she does not merely use the finger of her trunk, but bends the extremity of this flexible instrument round the handle. If the keeper puts a shilling near the boards which divide the room from the staircase, *out of the reach of the animal's trunk*, and orders her to pick it up, she immediately extends her trunk towards it, and blows hard against the boards. The blast moves the shilling within her reach, when she seizes it, and will either deliver it to him, or to any person that he directs.

As all the animals that are deposited in the menagerie at Exeter 'Change, are kept up one or more flights of stairs, it excites no inconsiderable degree of wonder, in most of the visitors, to conceive how such an unwieldy creature as an Elephant could have been conveyed into the place where it is exhibited. The mode is this: when an Elephant arrives, it is compelled to walk up a kind of platform that is laid over the staircase. In order to make it enter the den, one keeper pricks it behind, with a sharp-pointed spear, whilst another goes before, and entices it with

fruit. This, of course, is always a troublesome operation, and requires a great degree of care and address in the persons employed.

The Elephant that was given by the Grand Turk, in 1745, to the king of Naples exhibited more than usual intelligence and familiarity. It frequently assisted the masons who were employed about the house where it was kept, by furnishing them with water, which it drew for the purpose, from an adjacent well, in a large copper vessel. This it carried to them whenever they called for it. The animal found one day that something was the matter with the vessel, since the water ran out of it. Having received some instruction, he carried it to the brazier, had it mended, and afterwards went on with his business as usual. This Elephant was allowed to wander at large in the streets of Naples. He did no person any injury; and he seemed delighted to play with children, whom he would sometimes place on his back with his trunk, and afterwards, by the same means, place them in safety on the ground.

Homer, in several parts of his writings, speaks of ivory, but he did not know of such an animal as the Elephant. Herodotus is the first who said that this substance was part of the teeth of an Elephant. The first of the Grecians who saw the animal were Alexander and the Macedonians,

when fighting with Porus. The observations that were made about this time must have been exceedingly good, since Aristotle has given a very complete history of the animal, and much more correct than what even many of the moderns have written. After the death of Alexander, Antigonus, one of his generals, procured and kept several Elephants. Pyrrhus was the first who carried an Elephant into Italy, in the year of Rome 472, and as it was landed at Tarentum, the Romans gave to these animals, which till then were unknown to them, the name of Lucanian oxen. Carius Dentatus, who borrowed four Elephants of Pyrrhus, carried them to Rome to increase the magnificence of his triumphal entry. After this period these animals were by no means uncommon in the Roman empire. Metellus, having conquered the Carthaginians in Sicily, in the year 502, took their Elephants to Rome, in number, according to Seneca, a hundred and twenty, and a hundred and forty-two according to Pliny. Claudius Pulcher had combats of Elephants, in the Circus, in 665; and Lucullus, Pompeius, Cæsar, Claudius, and Nero, had also combats, both of Elephants with each other, and of Elephants against bulls and men. Pompeius had them yoked to his chariot at his triumph in Africa. Germanicus exhibited dancing Elephants. It was in the reign of Nero

that one of these unwieldy animals is said to have danced on a rope, at the same time that he carried a man on his back!! Ælian relates many extraordinary stories of the feats which Elephants in and before his time had been taught to perform. He says expressly that Elephants had been produced in Rome. This assertion, and the observations lately made by Mr. Corse, induce us to hope that it will not be found impossible to multiply these highly useful and interesting animals in a state of domestication.

There have been so few Elephants brought into Europe of late years, that it is believed no naturalist has yet had an opportunity of comparing together the two species, either alive or in any other state. The authors who have presented the public with the most satisfactory accounts of the Elephant, after Aristotle, are Perrault and Mr. Corse.

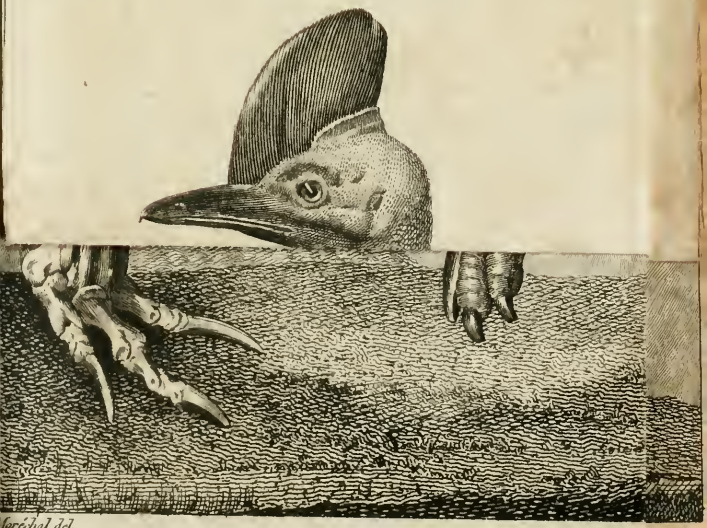
THE CASSOWARY.

[Illustrated by an Engraving.]

THIS species of bird is, in general, nearly five feet in height. Its body is extremely heavy, and its wings are so short, that it has no power whatever to raise itself from the ground in flight. The quills of which the wings are composed, are five in number; they are strong, distant from each other, and without barbs. They are, in short, so many spines; and are given to the animal as weapons of defence against its enemies.

The beak is about five inches long, somewhat curved, and of very hard substance. A bony protuberance, covered with horn, and of a blackish brown colour, forms on the top of the head a sort of helmet; commences about the middle of the beak, and its base extends to the back part of the head.

The skin of the head and neck is entirely naked, and is of a fine blue colour above, and red below. On each side of the front of the neck, hangs a long light blue caruncle or wattle. The body is covered with black feathers, which, at a little distance have the appearance of hair. Those on



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STRUTHIO CASUAR

STRUTHIO CASUARIUS. THE CASSIOWARY.

the hinder part of the back are of such length, as entirely to conceal the tail.

The thighs are each about eighteen inches long, and are covered with feathers almost to the knees. The legs are remarkably stout; the toes of each foot are only three in number, and the nail of each internal toe is about twice the length of any of the others.

This bird, like the ostrich, is not very delicate either in its taste or smell. It will swallow almost every thing large enough to pass down its throat, that is presented to it. Some writers have asserted, that the Cassowary will occasionally swallow even burning coals. It is particularly fond of fruit, and of the eggs of poultry; but it is not able to eat any kind of grain, as the tongue is so formed as to have no power of guiding this down the throat.

The Cassowary now kept in the Menagerie of the Museum at Paris, devours every day three pounds weight and a half of bread, six or seven apples, and a bunch of carrots. In summer, it drinks about four pints of water in the day; and in winter somewhat more. It swallows all its food without bruising it, and sometimes voids the apples and carrots entire.

Those animals of this species which have been hatched and reared in India, although they prefer bread made of sago to every other kind of food,

are likewise very fond of boiled rice. In poultry yards, where Cassowaries are kept, young ducks and chickens are not always safe from their attack. The wild birds live chiefly on fruits which fall from the trees.

The noise usually made by the Cassowary in confinement sounds as if it proceeded from the throat, and not unlike *hou hou*, weakly pronounced. The bird occasionally inflates its throat, and makes a murmuring or rumbling kind of noise similar to that of a carriage, or somewhat like distant thunder. In order to produce this it lowers its head, and places its helmet against the partition of its cage, and in so doing, it makes its whole body to tremble in such a manner as even to shake the whole surrounding place.

The Cassowary when pursued runs almost as swiftly as the ostrich. According to Clusius, it, at each step, throws its foot backward with a considerable jerk. In confinement, it walks gently, and not usually at a quick pace; but it will sometimes run and even leap, though this is done very heavily and with much noise. Valentyn informs us that when the Cassowary runs very swiftly, it appears as if it was partly dancing and partly flying. It is a very vigorous and powerful animal. Its beak being in proportion much stronger than that of the ostrich, it has the means of defending itself with great advantage,

and of easily pulling down and breaking in pieces almost any hard substance. It strikes, in a very dangerous manner with its feet, either behind or before, at any object which offends it.

It is believed that the Cassowary was unknown in Europe till about the year 1597, when the Dutchmen, on their return from their first voyage to India, brought one from Java. This bird was given to them by the reigning prince of that island. It was during a considerable while exhibited at Amsterdam, for money: it was then sold to the Count de Solms, who gave it to the Elector of Cologne; and by him it was presented to the Emperor of Germany. In the course of the ensuing six years, the Dutch merchants shipped two others from the same place, but both of these died during the voyage. In the year 1671, a Cassowary was sent by the governor of Madagascar, to the king of France, which was kept alive for four years, in the royal Menagerie at Versailles. Since this period, Cassowaries have been frequently brought into Europe, and as they bear the climate of Europe much better than most animals imported from the torrid regions, there are few countries in this part of the world entirely without them.

The Cassowary now deposited in the Menagerie of the museum at Paris, is sometimes ill tempered and mischievous. It is much irritated when

any persons approach it of a dirty or shabby appearance, or dressed in red clothes, and it frequently attempts to strike at them by kicking forward with one of its feet. It has been known to leap out of its inclosure and to tear the legs of a man with its claws. It once struck at its keeper in such a manner as to break his watchcase.

There is at this time a Cassowary in the Menagerie at Exeter 'Change, which cannot by any means be considered as an ill-tempered animal. This bird is every day driven many times out of its cage by the keeper, in order to be exhibited to the visitors. It runs without any apparent concern, for some time about the room, and allows even strangers to handle it without attempting to resent the freedom; and after a while, it marches quietly into its cage again.

Cassowaries are frequently kept in the court yards of houses in their native countries: but having a considerable space to range in, though deprived of liberty, they are said to retain a great inclination to mischief. In Sir George Staunton's account of the embassy of Lord Macartney to China, we are informed that a magistrate of Batavia had in the poultry-yard of his house, a great number of Cassowaries, and although these had been long in his possession, and were in some measure domesticated, yet their native ferociousness sometimes returned upon them, and they

would, without any provocation, savagely attack with their beaks and feet, such persons as incautiously approached too near them.

The Indians consider the Cassowary as a stupid animal. They have particularly remarked that it will even forget blows and other ill treatment which it has just received, and does not exhibit any inclination to resent them. It is soon tamed when caught young, but such of the animals as have attained a large size are not to be domesticated so easily.

The flesh of the Cassowary, according to the account of the voyager Labillardière, is black, hard, and dry.

The eggs are generally greenish or greyish, beautifully spotted with grass green, and marked towards their lower part with white. Some of them, however, are of an uniform pale colour. Valentyn says, he has seen the egg of a Cassowary which was entirely liver coloured, and without any spots. They are smaller, and of a more elongated form than those of the ostrich.

In a wild state, these birds lay three or four eggs at a time. These they deposit in the sand, and, after having covered them over, leave them to be hatched by the heat of the sun and the atmosphere. In some countries, however, and under some circumstances, they sit upon them like other birds. Valentyn informs us, that his peo-

ple in the year 1660, found a Cassowary sitting upon three eggs, but they were not able to ascertain the period of incubation.

The proprietor of the Menagerie at Exeter 'Change, had in his possession, some years ago, a Cassowary which laid four eggs, one at Oxford, one at Warwick, one at Hammersmith, and one at Abingdon, when it was in a caravan, for the purpose of exhibition. These eggs were somewhat larger than those of the swan, and of a blue ground colour, with dark specks. The circumstance of this bird's having laid an egg (when at Oxford) being made public, a great concourse of people were drawn together to see so remarkable a production, and amongst the rest, several members of the University. Some of the latter were not without their doubts respecting the fact; but, with the permission of the proprietor, a hole was drilled at each end of the egg, and a person in company blew the contents of it out of the shell. By this they were of course perfectly satisfied that no deception had been practised, by exhibiting an old shell filled with water, or any other fluid. The egg laid at Abingdon was presented to the queen.

This Cassowary died, during the time the caravan was at Durham, in the year 1779, and its stuffed skin was afterwards deposited in the great room of the Menagerie at Exeter 'Change. Its

entire height from the ground to the top of the head, was nearly seven feet, and its length from the back part of the neck to the rump, three feet. Its whole weight was about two hundred pounds.

In its general appearance, the young Cassowary is very different from the full grown bird. Its head is entirely covered with a naked and blueish skin. The helmet is at first very small, and increases in size by slow degrees. Till the animal attains the height of about three feet, its plumage is of a red colour mixed with grey.

Cassowaries are found only in the eastern parts of the South of Asia, that is, in the peninsula of India, beyond the Ganges, and in the islands of the Indian Archipelago; but they are not very numerous in any of these places. The deep forests of the island of Ceram, along the southern coast from Elipapoeth almost to Kelemori, contain great numbers of these birds. They are likewise found in Bouton, and in the islands of Aroe; but the latter are somewhat different from the others, particularly in their eggs, which are less beautiful, and of which the spots are of longer shape, and more confused in the marking. Although this bird is domesticated in Amboyna, it is not a native inhabitant of that island: according to the relation of M. Labillardière, it was conveyed thither from islands situated to the eastward.

The naturalists who accompanied the expedi-

tion of Entrecasteaux, observed some Cassowaries on the south east coasts of New Holland; but these, most probably, were of another species, namely, that described in the work on Botany-Bay, which was published *under the name of* Governor Philip, and there called the New Holland Cassowary.

The word Cassowary is derived from *Cassuwaris*, the name by which the bird is known amongst the Malays. The name of *Emu*, or *Ema*, was given to it by the Portuguese.

THE

BLACK OR COMMON BEAR.

ALMOST every person has, at one time or other, seen this animal. It is the same that is so often led about to fairs, for the purpose of exhibition. Sometimes we observe the rugged beast compelled to walk in an upright posture, with a monkey on its shoulder, and surrounded by a number of dancing dogs, ridiculously dressed like so many little boys and girls, all moving to some tune played on a pipe and tabor. It is well indeed, that these powerful animals lose much of their native ferocity, by being reared among mankind; and even exhibit in many cases, a great degree of attachment towards their keepers; for their patience is oftentimes put to the severest trials, by men who are not unfrequently more brutal than themselves. We hope, however, that what has been stated of the mode of subduing the temper of the Bear is not true; and that he is not almost starved to death, and severely beaten every day till he yields obedience to his savage masters, nor that he is taught to dance by being set upon heated iron-plates.

In a native state Bears are found in almost all the northern districts of Europe, Asia, and America. In some parts of Norway, they are very numerous, and more particularly in the provinces of Berguen and Dronthein, than elsewhere. There are here two distinct varieties, one of which is of considerably smaller size than the other, and of much lighter colour. They are sometimes grey and have whitish spots, but it is doubtful whether this may not be owing to their being young animals, that have not attained their proper colour. Bears are also numerous in Florida, where the inhabitants make constant war against them for their skins as cloathing, and as articles of barter with European nations; and their flesh as food. Their ardour in the chace has been infinitely greater since the Europeans have inspired them with notions and desires to which they were formerly strangers. The Bears of Florida are said to be very strong and powerful animals. When they are arrived at maturity they become extremely fat, and sometimes weigh as much as five or six hundred pounds. They are stated to feed on fruits and roots of various kinds; and the inhabitants believe that they also devour calves, sheep and other animals: no instances have, however, been recorded of their attacking mankind, except in cases where they have been previously wounded or otherwise rendered furious.

Of the two varieties before mentioned, which, indeed, are found in other countries besides Norway, the black Bear is most partial to mountainous or alpine regions. This is usually considered as much the least ferocious, and to subsist chiefly on vegetable productions; whilst the other, the brown Bear, will prey not only upon animals, but upon animal substances sometimes in a state nearly approaching to putridity. Sonnius relates that Bears have been known, after battles, to approach the scene of carnage, and dispute with wild dogs and hyenas the possession of the unburied bodies.

The high mountain of Ossinova, in Siberia, says Professor Pallas, is covered with large poplar trees, and with raspberry bushes. And the tracts of bears, in every part of the neighbourhood, are very numerous. The animals are excessively fond of the raspberries; and women and children who ascend the mountain for the purpose of gathering this fruit, are, he informs us, not unfrequently carried off by them, but are never in the least injured. He afterwards states that, in this country, the Bears are not dangerous during the summer; and that they do not attack persons who even approach them, unless they are themselves assaulted. In the above passage, we cannot but remark a contradiction which we are surprised to observe in the writings of so respect-

able a traveller, and so excellent a naturalist as Professor Pallas. He says, that these animals do not, of their own accord, commence an attack upon mankind, and yet that they carry off, and that without any apparent reason, both women and children.

As these animals, by their long, thick, and rugged coat, seem calculated to subsist exclusively in cold regions, we should scarcely expect to hear that they were natives of any part of the burning climate of Lybia. Yet, among the lofty mountains of that country, whose summits are covered, through the whole year, with snow, they are not unfrequently to be seen; and they are here very carnivorous. Poiret says, that they sometimes descend into the plains.* The Arabs believe, that when Bears are closely pursued, they throw backward stones and dirt, for the purpose of covering their retreat. This, however, is occasioned entirely by the peculiar form of their feet, the whole sole of which, from the toes quite to the heel, is applied to the ground; and their consequently awkward motions, when urged to a degree of expedition to which they are perhaps not much accustomed.

It is very doubtful whether there are any Bears in Egypt. From the general nature of the country, we should certainly be inclined to sup-

* Voyage en Barbarie, p. 278.

pose that such animals could not subsist there.---Formed to live in the mountainous forests of frozen regions, they are ill calculated for sandy and arid plains, under a torrid sun. We are indeed assured by Pliny, that they are not natives of any part of this country:* yet Herodotus states expressly, that they are sometimes, though rarely, met with there. I am inclined to suppose that the latter writer has mistaken the Hydra for the Bear; and the more so, because more than one traveller within the last hundred and fifty years, has done the same.

In northern countries, these animals retire, about the beginning of October, into their dens or caves, where they prepare for themselves a bed of grass, leaves, and moss. Here they continue till the ensuing spring, in a state nearly of torpidity. They subsist through the whole winter, entirely without food; and do not, as many persons believe, support themselves by sucking their paws.

> They make their bed beneath th' inclement drift;
> And, with stern patience, scorning weak complaint,
> Harden their heart against assailing want.

In some of the thinly inhabited districts of Greenland, Bears are not only numerous, but occasionally very destructive. Whenever any of them are seen to approach the cultivated parts,

* Hist. Nat. lib. viii. cap. 76.

the natives unite in pursuing them, in order to prevent the race from increasing in their neighbourhood, which they know would be very injurious to their flocks. As these animals are generally very ferocious when wounded, the hunters seldom venture to go out against them in parties smaller than four or five in number. They arm themselves with long spears, and are attended by dogs. The easiest and the safest way of destroying the animals is, however, said to be by intoxicating them with brandy, mixed with honey, (which is one of their most favourite kinds of food) and placed in the cavity of some hollow tree in the neighbourhood of their usual haunts.

The Finlanders are generally considered amongst the most expert of all nations in the chace of the Bear. Very few of them employ fire-arms in this pursuit, as they do not chuse to risk their life to the uncertain shot of a musket. Their favourite weapon is an iron lance fixed at the end of a pole, and having a short cross-bar about a foot from the point. When the Finlander has discovered the den of a Bear, he goes to the entrance, and makes a noise for the purpose of irritating the animal, and provoking him to quit his retreat. After a while, the Bear gets up and rushes with fury out of the cavern. The moment he sees his adversary, he rises on his hind feet, for the purpose of throwing himself upon, and tearing him to pieces.

The Finlander, unappalled, instantly puts himself into an attitude of defence, and with the spear drawn as far back as possible, in order to conceal its length from the observation of the animal, approaches the beast till he is so near that the Bear is about to close upon him: at that instant, the hunter pierces him to the heart. As soon as the animal is dead, his brethren in the chace come to him for the purpose of assisting him in carrying off the booty to his hut. The triumph terminates in a sort of festival, where the aid of the Finnish poet is called in to sing the valorous exploits of the hunter.

The Bear dance of the Kamtschadales, has been described in a very amusing manner, by Mr. Lessep, in his travels in Kamtschatka; and as this has been quoted in the Animal Biography of Mr. Bingley, I shall insert a somewhat corresponding account of the Bear dance in Finland, from Acerbi's Travels, vol. i. p. 391. "A peasant rests his hands upon the ground, and at the same time supports himself upon his legs, so as to keep his body in an horizontal position, like the Bear, or any other animal, when it walks on all fours. Remaining constantly in the same attitude, he begins to dance, and by his leaps and jumps, studies to keep time with the music, which is extremely uncouth. The execution of this dance is attended with great labour and fatigue, insomuch that

it is very difficult for a man to go on with it above three or four minutes without falling into the most violent perspiration. It is, however, a sort of exercise which is good for strengthening the muscles of the arms, and therefore highly useful to the natives of this country, whose laborious exertions in attending the cataracts in summer, require the greatest vigour, and muscular power."

I neglected to mention, in an earlier part of this account, that the inhabitants of some countries entertain an absurd notion, that the Bear, when wounded, makes a kind of salve of some healing herb, and applies it to the wound.

When the Icelanders encounter a Bear, and are unprepared for attack, it is said that they generally throw upon the ground something that may arrest its progress, and amuse it, till they run to their homes for their weapons. A glove is generally preferred for this purpose; as it is stated, that the animal will not leave it till he has thoroughly examined it, and even turned every finger inside out. Whenever they kill a Bear, the bailiff of the district, by order of the government, gives a suitable reward, in order to encourage the destruction of the animals. Anderson informs us that the skins of the Iceland Bears are much more beautiful than those of any other country.

The fat of these animals has obtained a certain

degree of repute from its being said to be useful in increasing and thickening the hair. The gall is a much boasted nostrum for the epilepsy, asthma, jaundice, ulcers, and tooth-ach.

In the supplementary writings of the Comte de Buffon, and the notes of M. Sonnini, there is an interesting account of some Bears brought up in a semi-domestic state at Berne, in Switzerland. These animals were kept in large square places, dug out of the earth, and lined at the sides and the bottom with stones. Dens of masonry were formed in them, under the ground of the sides, having their pavement on a level with that of the open space. Their dens were each divided by a wall, and an iron grate, the latter of which was let down from above. In the middle of each square was left in the pavement, a hole sufficiently large to admit of a tree of considerable size being placed upright in it. There was likewise, in each square, a large trough filled with fresh water.

It was in the year 1740, that two Bears, very young, were first brought here from Savoy. One of these, the male, broke his back, and was killed in August 1771, by falling from the top of the tree. The female, in the month of October following, when the first part of the following account was written, continued still alive.

When these animals had been here about six years, the female began to produce young ones.

At the first litter, she had only one; and afterwards she produced from one to three, but never more than this number. When the young ones come into the world, although they are by no means ugly animals, they are very unlike their parents both in shape and colour. Their body is nearly round, and their snout is somewhat sharp-pointed: they are of a yellow colour with a white neck. No person who was a stranger to the animals, could even conjecture that they were the offspring of the Bear. They continue blind for four weeks. At first they are about eight inches long from the muzzle to the base of the tail: by the end of three months, they measure fourteen or fifteen inches; and their hair is then about an inch long. Before they are full grown, they cast all their white and yellow hair, and assume a perfectly brown coat.

The squares in which these animals were first kept, having been in the middle of the town, it was found necessary to fill them up, and to place the Bears in others that were made between the ramparts. The above-mentioned two animals were consequently separated, whilst they were conveyed into their new apartment. When they again met, they appeared to be quite in raptures: they raised themselves upright, and embraced each other with the greatest delight, to the great amusement of all the persons who were spectators.

After the death of the male, by his fall from the tree, the female was so much affected, that, for several days, she refused to take any food.

These animals were very fond of climbing into their tree, which was a green larch, placed there every year in the month of May. They would frequently amuse themselves by breaking pieces off the branches, particularly after the tree was newly planted. Their food was generally rye-bread, cut into large pieces, and soaked in warm water. They were also fond of all kinds of fruit; and whenever the country people, which was sometimes the case, brought unripe fruit to the market, the officers of the police had orders to seize such, and throw it to the Bears. The animals, however, seemed on the whole to prefer greens and other esculent vegetables to most kinds of food.

Whenever the female had young ones, the male was removed from her, lest he should destroy them. These were allowed to continue with their mother for ten weeks; after which they were separated, and fed for some time on milk and biscuits. The last litter that she produced was when she was thirty-one years old.

Two of the Bears brought up in one of these open squares at Berne, were carried into France, and placed in one of the narrow lodges, in the Menagerie of the Garden of Plants, at Paris,

where they had scarcely space enough to turn themselves round. The animals, thus cooped up, were fed on bread, fruit, and vegetables: but they appeared to suffer much from the confined space, which till then they had been entirely unused to. When they were first brought to this Menagerie, it was found very difficult to make them leave the cage in which they had been carried: they obstinately persisted in remaining there. To no purpose were various forcible means attempted; and in vain were numerous living animals placed before them, in the hope of enticing them out. They continued immoveable; and it was not till after many hours of useless trial, that a living duck, placed at a little distance, tempted them to come forth.

The natural disposition of these Bears was gross; but they were by no means either mischievous or savage animals. They knew the voice of their keeper; and at all times shewed sufficient docility and obedience to his commands.

THE

WHITE OR POLAR BEAR.

THIS is the unhappy looking animal called Sea Bear, which we observe in many of the travelling exhibitions of wild beasts, sitting in a somewhat upright position like a dog, with long shagged and dirty white hair. The space to which it is confined is in general insufficient to allow to the miserable beast the natural extension of its body. The keepers state that they feed it with flesh, and that they throw over its body once or more in the course of every twenty-four hours, a quantity of water, in which salt has been dissolved.

Without this it is said the animal could not subsist. Can we be for a moment surprised when we are told that, under such circumstances, the White Bear is a morose and savage beast? It is really a lamentable sight to observe thus cooped up, in a cage, of size only just large enough to admit its body, a creature which, in a state of liberty, is adapted for ranging over a great expanse of the ocean; and which, even in its native regions, seems but ill calculated to live at a dis-

tance from the sea. Although it is not strictly amphibious, as some writers have endeavoured to persuade us, yet such is the agility of its motion in the water, and such its power of continuing in that element, without fatigue, that it seems naturally connected with it; and whenever it is removed from thence it always gradually pines away till it dies. As these animals inhabit exclusively the seas and sea-coasts of the extreme northern regions, they are supposed to pass the greatest part of their time on the ice. Along with this they are sometimes unconsciously floated to vast distances from the land. They have in this manner been occasionally conveyed into latitudes many leagues south of their native country; and not unfrequently into places where, deprived of a sufficient supply of food, they have at length perished with hunger.

These Bears live in a state of continual warfare with all the species of seals, and with the arctic walrus, or sea cow, which they kill and devour upon the ice. The latter animals are, however, from their enormous tusks, sometimes too powerful for the Bears, and both have sometimes been known to die of their wounds.

With respect to the seals, they are generally killed while sleeping on the ice; or are seized by the head, by the watchful Bears, when they thrust it up through their breathing holes in the

URSUS MARITIMUS.

WHITE BEAR

ice. Such, in short, is the voracity of these animals, that they are enemies to almost every thing living. The Greenlanders say, that they are occasionally known to seize upon rein-deer, hares, and even ptarmigans. This is not all: they devour the dead and putrid bodies of all kinds of animals, consuming every part except the skin, and sometimes even that. They also feed on the berries of *empetrum nigrum*, called in England crow-berries, and on the whortle-berries, which, in several parts of Greenland, are very abundant. Unless they are hard pressed by hunger they seldom attack mankind. The Greenlanders, when they happen to be pursued by a White Bear, and find there is no other probable mode of escape, fall upon the ground and feign themselves dead, in which case they declare that the animal will not injure them. But if the Bear is about to attack them for the purpose of satisfying his hunger, they cannot surely cheat him by such a stratagem. It is also an opinion of these people, that the smell of burnt feathers will drive the animal away.

It is stated by one of the German voyagers to Iceland, that his party happened to cross the track of a large White Bear, which immediately pursued them. In a state of no inconsiderable alarm they endeavoured to frighten the animal by shouting and other noises; but in spite of all their ef-

forts he ran directly at them. When he had arrived within a short distance, he was shot through the body with a musket. In a moment he rose upright on his hind feet, and was preparing to defend himself with fury, when a second shot, fortunately for the travellers, laid him dead upon the ground.

The sight of these animals is generally considered not very good; but their senses both of hearing and smelling are singularly acute. Their voice has a distant resemblance to the hoarse barking of a large dog.

To the inhabitants of warm and temperate climates it appears strange that the females of this species should bring forth their offspring in the midst of winter, and not unfrequently upon the ice. If at this period they happen to be upon land, they are said to form a bed for their young ones in the snow. These holes or dens in the snow have been considered by Erxleben and some other naturalists as the places in which the Bears pass the winter in a torpid state. But this is expressly denied by Otho Fabricius, who resided many years in Greenland, and who appears to have been intimately acquainted with the habits of most of the animals of that frozen country.

The Polar Bears seem of too hardy a temperament, and to have, throughout the whole winter, too plentiful a supply of provision to render, as

in the arctic land animals, a temporary retirement at this season at all necessary. The number of young ones produced at a litter is usually one, two, and rarely three; and whenever these are attacked, the mother will defend them to the last, and even forfeit her life in endeavouring to afford them protection.

With the inhabitants of Greenland, the flesh and the skins of these animals are in great request. The former is white, and considered by this people as by no means unpalatable food. The skins are said to afford great comfort to persons who traverse those dreary regions in winter. They are made into boots, shoes, gloves, and various other parts of dress. The mode of preparing them is to put them into saw-dust, and there rub them hard in the inside, till all the fatty particles are chafed off, and afterwards to hang them up in the air to dry. The smell of such garments to an inhabitant of southern climates, would not probably be very grateful; but this, to a people who are proverbially nasty in all their modes of life, is a circumstance of very trifling import. Of the tendons the Greenlanders make a kind of thread; and the fat is used by them for all the same purposes as whale and seal oil. They burn it in lamps; and they say that it is not so rancid with food as either of the latter!!

These animals are generally killed with spears. The Greenlanders sometimes pursue them in the water, and sometimes attack them with dogs upon the ice.

M. de Buffon is hardly inclined to consider the Polar Bear as of a species distinct from the Black Bear. It is true that a white variety of the latter is occasionally found in Russia, Poland, Siberia, and even in Tartary. This circumstance, however, proves nothing with respect to the Polar Bear. He doubts whether Marteus, in his account of Spitzbergen, examined this animal with accuracy, (although he has given an excellent and correct description of it); his only apparent reason was, because it opposed his opinion; and yet he gives us no reasons whatever that are satisfactory in support of this opinion. The animals are evidently and perfectly distinct. No one can examine the prints that are inserted in the present work, and which are really accurate representations of the animals, without being convinced that they belong to different species. The difference in size has not been attended to in these; but the Black Bear does not often exceed the length of five feet and a half, or six feet: whilst the Polar Bear has been known to attain the length of twelve and even of thirteen feet. The shape of the head and neck is quite different. In the

latter animals these are greatly more elongated than in the former; and the ears are, in proportion, much shorter.

Polar Bears are found in Greenland, Spitzbergen, Kamtschatka, Iceland, on the shores of Hudson's Bay, and on floating ice, sometimes as far south as Newfoundland.

THE

SINGLE-HORNED RHINOCEROS.

THE Rhinoceros, which is an animal next in size to the Elephant, deserves, almost equally with that, the attention of naturalists, from the singularities of its constitution and manners. But as it is not possible to reduce it to a state of domestication, and as it is found only in desert places, and is not be approached without danger, it has in all ages been much less known than the elephant. In fact, it has not been, till late years, that mankind have been able to form any correct notions even of the most conspicuous parts of its organization.

The characters of the genus are well defined. The horn which these animals carry on their nose, sufficiently distinguishes them from all others.--- It is not hollow like that of oxen and sheep, nor bony like those of the deer. But it is solid like the last, and composed, as in the first, of fibres somewhat analogous, in their nature, to hair.--- The Rhinoceroses have each of their feet, both before and behind, divided into three toes, a formation which is not found in any other quadruped.

As their legs are not so long as those of the elephant, and their head is not furnished with long turks or weapons, they are not supplied with a proboscis. The middle part of their upper lip, however, is elongated, and is capable of so much motion, and of being exerted with so much force, that the animals can employ it in breaking down shrubs or branches of trees for their nourishment.

The molar or grinding teeth are twenty-eight in number, and are very peculiar in their form. The crown of each of the lower ones represents a double crescent: the upper ones are squared, and present a prominent line along their edge, and two others perpendicular to this. The hollow betwixt these lines varies considerably, both in its shape and extent, according as the tooth is more or less worn away. The front teeth are not of the same number in all the species, and there is one that is entirely deprived of them.'

The difficulty that there is of comparing the different species together, has greatly retarded a knowledge of their true discriminative characters.

These animals have been considered as very rare and uncommon in all ages. Aristotle does not even mention them. The first Rhinoceros spoken of in history was that which appeared at the celebrated fête of Ptolemæus Philadelphus, and which was made to walk after all the foreign animals, as the most curious and uncommon of

them all. (Athenæus, lib. v.) This was brought from Ethiopia.

The first that was seen in Europe, appeared in the games of Pompey. Pliny informs us that the latter animal had only one horn. (Pliny lib. viii. c. 20.) Augustus exhibited another, in his triumph over Cleopatra. Dion Cassius, who relates this fact, does not determine the species.

Strabo describes, very exactly, a single-horned Rhinoceros, which he saw alive at Alexandria: he even speaks of the folds of its skin. Pausanias has correctly described the two-horned Rhinoceros, under the name of *Ethiopian bull.* There were two of the latter species at Rome, in the reign of Domitian, the representations of which were engraven on some medals of this emperor; and which were the subject of some of the epigrams of Martial.

The modern naturalists, till within the last few years, were much perplexed by the accounts of these animals, from the circumstance of their being represented as having two horns. Antoninus, Gordius, Heliogabalus, and Heraclius, all speak of having seen Rhinoceroses. The ancients, consequently, had a knowledge, respecting the animals, of which the moderns were long ignorant. The first that was seen in Europe, during the last centuries, was that sent from the East Indies, in the year 1513, to Emanuel, king of Portugal: he

presented it to the Pope, but during the voyage it became so furious, that it sunk the vessel in which it was carried.

There was sent from Lisbon, to Albert Durer, the celebrated painter and engraver of Nuremberg, a figure of this animal, which, for many years, was copied into all the works of natural history. Its general shape is good; but the wrinkles, and tubercles or warts of the skin are made so large and prominent, that the animal appears to be covered with scales.

The second Rhinoceros was brought in 1685, to England; the third was carried, for exhibition, to most parts of Europe, in 1739; and a fourth, (which was a female), in 1741. That of 1739, was described and figured in the Philosophical Transactions, by Dr. Parsons, who likewise mentions that of 1741.

There is reason to suppose, that the latter was the animal which, in 1749, was exhibited at Paris, and figured by Oudri, and which Albinus has likewise figured in the fourth and eighth engravings of his history of the muscles.

The fifth and sixth Rhinoceroses, that were brought into Europe, were the two mentioned in Mr. Bingley's Animal Biography, as having been purchased by Mr. Pidcock, the proprietor of the menagerie at Exeter 'Change, London. The ormer was brought from the East Indies, in the

Melville Castle, East Indiaman, in the year 1790; and the latter, which was afterwards purchased for the Emperor of Germany, was landed in England, in 1799: it however died before it could be sent away. These were both males.

The seventh Rhinoceros is that described and figured in "La Menagerie du Museum," of La Cepede and Cuvier, from which the principal part of the present account is translated. All these were of the single-horned or Indian species.

Two individuals described by travellers, namely, that which Chardin saw at Ispahan, and which was brought thither from Ethiopia, and that of which Piso has inserted a figure in the natural history of the Indies of Bontius, had also each only one horn.

The two-horned Rhinoceros has never hitherto been brought alive into Europe; and as it has only been reobserved by some of the latest travellers, naturalists began even to doubt its existence, and consequently were much embarrassed in attempting to comprehend what the ancients had asserted respecting it. Dr. Parsons, however, satisfied that there must be two distinct species, asserted his belief that the single-horned kind was exclusively an inhabitant of Asia, and the two-horned, of Africa.

Although Flaccourt says that he saw the latter, at some distance from him, in the bay of Saldag-

na, yet Colonel Gordon was the first who correctly described it, and his description was inserted by Allamand, in the supplements to the Natural History of M. de Buffon.

Sparmann, in the Memoirs of the Academy of Sweden, and in his Travels at the Cape of Good Hope, has given a correct account of the two-horned Rhinoceros. From these it was ascertained, that besides differing in the number of its horns, the Rhinoceros of the Cape differed from the Indian species, in its skin having none of those extraordinary folds which distinguish the latter. But Camper declared that there was also a difference betwixt the two species, in the number of their teeth, the Cape Rhinoceros having only molar teeth, whilst the Indian species has, besides these, four large, and two small incisors.

The history of the Rhinoceros tribe is not yet freed from difficulties. Gordon expressly asserts that the two-horned Rhinoceros which he examined, had four incisors in each jaw; and both Sparmann and Camper, that these are wanting, and they have been found wanting in several skins of this animal which have been brought into Europe. Bruce has inserted, in his Travels into Abyssinia, a figure of the two-horned Rhinoceros, in which the skin is represented as having folds

somewhat similar to those of the single-horned species.

But it is to be observed, that this figure is only a copy from that of Buffon, with the addition of another horn. But, in order to save the credit of this traveller, it is supposed that he was induced to this evident plagiarism, merely from the circumstance of that figure being, in other respects, an exact representation of the animal that he had seen.* We must, therefore, either suppose that there are four distinct species, or that the number of teeth, and the folds, are merely accidental varieties. Mr. John Bell, the surgeon, has described, in the Philosophical Transactions, for 1793, a Rhinoceros from Sumatra, which appears to have been specifically distinct from all the others: it had two horns, a skin without any hair, and four large incisive teeth, of which those of the under jaw were long and pointed, but no small ones.

The single-horned species, (which shall now alone occupy our attention), has six incisive teeth. It sometimes attains the length of twelve,

* There is some error in this assertion, since, on comparing Bruce's figure with that of Buffon's single-horned Rhinoceros, they appear to be essentially different. In Sonnini's edition of Buffon, the figure of Bruce is copied in tom. 28. pl. ix. fig. 2, under the appellation of "*Autre Rhinoceros.*"

and the height of seven feet, and weighs five thousand pounds and upwards. The individual here figured was nine feet long, four and a half high at the shoulder, and eleven and a half in girth. The head was two feet long, and eighteen inches thick at the occiput: the ears were each ten inches long; the eyes were an inch in diameter, and the nostrils three inches: the feet were eight inches across: the opening of the mouth was eight inches deep: the tail was ten inches in length. There were remarked on the head, ten large, hard, and prominent tubercles; namely, one in front of each ear; one above each of the eyes; one on each side of the head, ten inches behind the eyes; another on each side of the head, near the corner of the mouth; and two single ones, the first on the forehead, betwixt those which were in front of the ears, and the other at a little distance below this. The latter, which is longitudinal, compressed at the sides, and of considerable elevation, may be mistaken for the rudiment of a second horn, and in some individuals, may have induced the supposition that the animals varied in the number of their horns.

This Rhinoceros had so worn away its horn, that it scarcely projected more than an inch in height, and eight inches in breadth, above its base: if this had not been the case, it would,

probably, have been of considerable length.—Many individuals have been seen, in which this weapon was some feet in length; and there is a horn in the museum of the menagerie at Paris, which, though it is broken, measures as much as three feet eight inches and a half. This is very thin; and those which continue short, are generally much thicker. It does not appear that these differences in size depend at all on difference of sex.

In the single-horned species, the horn is immoveably fixed into the bones of the nose, these bones having a very unequal surface, of which the tubercles penetrate into the hollow of the skin to which the horn is attached; but in the Cape Rhinoceros, the bones of the nose are smooth, and there is nothing to prevent the horns from moving with the skin, if the muscle, denominated by anatomists the *occipito-frontalis*, has only sufficient strength to contract the latter.—Sparmann has asserted that these horns were capable of being moved, and Bruce is certainly incorrect in his somewhat ill-natured criticism on Sparmann's remark.

The folds of the skin give to the single-horned Rhinoceros a strange and monstrous appearance. These somewhat vary in different individuals; but those on the neck are always most prominent. The animal above described, had a fold which

extended from the front of the ear to the posterior angle of the jaws; a very small one under the throat; a large one which descended under the neck, where it united with a corresponding fold, in a kind of transverse dew-lap; and another, one part of which ascended obliquely upon the shoulder. There was a small fold, which formed a triangle with this and the principal fold from which it arose.

The body presented two much-extended folds which formed a kind of girdle, the first behind the shoulders, and the other in front of the thighs. There was a transverse fold on each buttock, which rose from near the origin of the tail; and another oblique one, which sprang from the hind knee, and extended upward towards the side of the tail. There was, lastly, another which encircled each fore-knee. The skin betwixt these folds was reddish, and by no means so hard as that of the other parts of the body. It is said that there are in these hollows a kind of louse which is peculiar to the Rhinoceros; and that, when the animal wallows in the mud, there are frequently great numbers of millepedes and other insects collected in them.

The skin of the Rhinoceros is harder and much more dry than that of the elephant. There are, all over the skin, small protuberances of the breadth and thickness of a piece of money, which

in most of the figures of the animal, have been represented as a great deal larger than they really are. The skin is entirely naked of hair, except at the extremity of the tail, the edge of the ears, and about the base of the horn. With respect, indeed, to the latter, they are rather to be considered as fibres detached from the horn, than as true hairs. There are only two teats, and those are situated in the groin. The general colour of the animal is a dark greyish brown: the hoofs are much stronger than those of the elephant; they cover both the under and upper parts of the toes, and are attached to the phalanges by thin and parallel plates, larger than those which are observed in the horse. The large incisive teeth wear away, and become flat at their extremity: the two smaller ones of the under jaw are of a conical shape, and are concealed under the gum during the whole life of the animal. It is only in the skeleton that they are to be discovered.---Some writers have asserted that the tongue of the Rhinoceros is covered with hard scales, which will tear off the skin of an animal by licking.---Buffon has even related this circumstance of the individual animal here described, which is by no means true. Its tongue is soft. This had indeed on its anterior part, some slender oblique ridges; and on the palate there were twelve transverse prominences.

It has been ascertained, that the females of this species produce no more than one young one at a birth, which at its first appearance in the world, is about the size of a tolerably large Newfoundland dog. It has at this time only the first rudiment or bud of the horn. At the age of two years, this horn is not more than an inch in height, although the animal has attained the size of a heifer. When the animal is six years old, the horn is nine or ten inches long.

A female Rhinoceros ten years old, described by Daubenton, was ten feet in length, five feet high, and had a horn which measured about twelve inches. There is reason to suppose that this is about the time at which the Rhinoceros arrives at maturity. The animal here described, which died when it was somewhat more than twenty-five years old, with all the indications of advanced age, did not quite reach that size. We may therefore suppose that the natural duration of the life of the Rhinoceros does not approach that of the elephant, nor even equal that of a man; but it appears that the horn increases in size through the whole life of the animal.

The Rhinoceros has none of that docility and gentleness of disposition which so conspicuously marks the character of the elephant. It is always irritable and untractable. It is generally to be observed in a sluggish and indolent state, not unlike

that of the hog; but when its anger is roused, it sometimes becomes very terrible, since its size, strength, and the thickness of its skin, render almost all kinds of weapons of little avail against it. The individual here described and figured, killed two young persons, who were imprudent enough to enter its inclosure.

In a wild state, the Rhinoceros lives in solitude, in thick and secluded forests. If it perceives, at any time, the most distant approach of a man, it runs upon him with fury, throws him down, and tramples upon him, or else rips up his body with its horn. Its legs are very short, yet it is able to run so rapidly that a horse is not able to gallop away out of its reach.

A fact recorded by Bontius sufficiently proves that it is not wanting, in a certain degree, of instinctive sagacity towards the preservation of its offspring. A female, attacked on a plain by the hunters, for a while occupied their whole attention, whilst her young one escaped into an adjacent wood. During this time she sustained their attack without any attempt to defend herself; but when her young one had concealed itself, she turned upon her assailants with so much fury, that she soon compelled them all to seek for refuge behind the trees.

The ancients attributed to this animal a peculiar antipathy against the elephant, but it is pro-

bable this only originated in their being made to fight with each other in the public games, since in a state of nature they have no motives whatever for attacking each other, and no facts have been stated in proof of this natural antipathy.

Chardin asserts, that he had seen two elephants and a Rhinoceros live together in the most peaceable manner. The Indians attribute to the Rhinoceros, and doubtless without foundation, a peculiar affection for the tiger. As both these animals delight in marshy places, and the borders of rivers, they may have been frequently seen near each other; and it is probable, that from this circumstance alone, the fabulous opinion may have been raised. The Rhinoceros, like the hog, delights in refreshing itself by plunging into the water, and wallowing in mud. There are many other points of alliance betwixt the two animals. Its sight is weaker, from the eyes being smaller and more concealed in the head, but its power of smelling is so peculiarly acute, that it is impossible to surprize it but by approaching the places of its concealment against the wind. Its sense of hearing is likewise very acute. Its usual voice somewhat resembles the grunting of a hog, and is not very strong, but when the animal is enraged it utters a sharp kind of cry, which is audible to a great distance.

The Rhinoceros does not consume so much

food as the elephant. In a state of nature, it feeds on the young branches of nearly all kinds of trees, and on the larger species of herbs. It sometimes approaches and lays waste the plantations in the neighbourhood of its residence, and particularly those of the sugar canes. The Rhinoceros that was brought into Europe in the year 1749, ate sixty pounds weight of hay, and twenty pounds of bread every day.

That described by Dr. Parsons, consumed seven pounds of rice mixed with sugar, and a great quantity of hay and green vegetables. The Rhinoceros in the Menagerie of the museum at Paris, ate about a hundred and fifty pounds weight of hay; and the animal that was brought to Exeter 'Change, London, in the year 1790, was allowed every day about twenty-eight pounds of clover, the same weight of ship-biscuit, and a considerable quantity of vegetables; and likewise about five pails full of water, which was given to him at two or three different times. The sleep of the Rhinoceros is very profound.

The first of the two Rhinoceroses that was brought to Exeter 'Change, came from Laknaow in Bengal, and on his arrival in England, is supposed to have been about five years old. He had none of that ferociousness which most of these animals possess, but would suffer himself to be led or driven by the keeper, about the exhibi-

tion room, and would allow even persons that were perfect strangers to him, to approach and touch him. He died at Corsham, near Portsmouth, in the month of October, 1792, in consequence of his having, about nine months before, slipped the joint of one of his forelegs, by suddenly rising up from his bed.

The other of these animals was likewise brought from the East-Indies. The proprietor had possessed him only a few months, when an agent of the Emperor of Germany, purchased him for the royal menagerie at Vienna. It is probable that this Rhinoceros had, by no means, attained his full growth, since he was scarcely so high as an heifer of two years old, and his horn was only beginning to sprout. He was tame and docile, but did not manifest any peculiar attachment for his keeper. His usual food was hay, oats, and potatoes, with a considerable portion of fresh vegetables. The skin was extremely hard and much tuberculated on the upper parts of his body, but on the under parts so soft as easily to be cut through with a knife. He died in the beginning of the year 1800, before he could be sent off to Germany. Till within a few days of his death, he appeared to be in every respect in good health; and the first symptom of his approaching dissolution was a difficulty of breathing, with

which he was suddenly attacked. The Emperor paid for him a thousand pounds sterling.

The skin of the Rhinoceros is of no great use; though, from its extreme hardness, it is sometimes cut into stocks for whips. The horn is valuable in eastern countries, for the purpose of making cups and vases, since the Indians and the Arabs all believe that no poisonous liquid can be put into these without its being immediately discovered. This prejudice is of very ancient date, since Arrian in his Peryplus of the Red Sea, says, that the horns of the Rhinoceros were, at that time, a considerable article of commerce.

The limits of country assigned by nature to the Single-horned Rhinoceros are not perfectly known. Some writers assert, that it is only to be found in India, but from the relations of travellers, there is reason to believe, that it is occasionally seen in some of the districts of Abyssinia. The individual that was seen by Chardin, at Ispahan, had been brought thither from Ethiopia, and Bruce informs us, that he saw some of these animals near the Cape Gardefan. But all the Rhinoceroses in the interior of the country, he says, have two horns, like those that are found near the Cape of Good Hope.

The Rhinoceros of the menagerie at Versailles, which has been the principal subject of the pre-

sent article, was drowned in the bason of his inclosure, in the month of July, 1793. In spite of the heat of that season of the year, the body was conveyed to Paris, and the two celebrated anatomists, Metrad and Vic-d'Azir, were occupied for several days in dissecting it. From their manuscript remarks, the following notes have been taken. The drawings, 36 in number, were made under their inspection, by Maréchal and Redouté, and are now deposited in the library of the museum at Paris.

As soon as the abdomen was opened, there was presented to the view three coils of intestines, each somewhat more than a foot in diameter.—The two first were united through their whole length by a thick cellular membrane, which at first sight made them appear only like a single gut; but on carefully dividing this membrane, it was immediately seen that they were only two folds of the same intestine. The third of these portions was the *cæcum*. In front of these was observed a small part of the stomach covered by the *epiploon*: this was folded above the *colon*, but it was so large as entirely to cover it if it had been extended. Behind the cœcum, and in front of the pubis, was seen a small part of the *ileum*. The stomach was elongated, rounded at both extremities, and almost equal in diameter

through its whole length, except in the part opposite to the *cardia*, where it was somewhat thicker than elsewhere, and at the distance of about two-thirds betwixt the *pylorus* and the *cardia*, where there was a remarkable contraction. It was about four feet from right to left, and about fourteen inches in diameter. The cardia was fifteen inches from the left extremity, and the pylorus seven from the right. These two orifices were both on the side of the small curvature. The spleen was attached to nearly the whole of the great curvature of the stomach. It was of an elliptical shape, and about four feet in length, and one foot broad. The liver had only two lobes, and a small lobule: the right lobe was larger than the left, which was divided by a scissure of considerable depth; there was another small scissure on the base, and towards the interior edge of the right lobe. The liver, when extended, measured from right to left, four feet eight inches: there was no gall bladder, but an enormous hepatic duct.

This account contains no indication of the precise length of the intestinal canal. Besides the two arcs of the *colon*, already mentioned, this intestine had other portions less voluminous, and in which the inflations and tendinous bands were more distinguishable. The *cæcum* was more than

two feet long, and fifteen inches in diameter; its surface was somewhat smooth in front, and its inflations were chiefly behind.

The internal surface of the intestines presented to the observation some things which were extremely curious. In the first third part of the duodenum, situated betwixt the pylorus and the insertion of the hepatic and pancreatic ducts, the internal membrane had numerous small longitudinal folds, arranged somewhat in the segment of a circle. Towards the last third of the duodenum, these folds gradually took a triangular form, and a somewhat transverse direction; and at last were changed into a sort of pyramidal papillæ. At the distance of six inches from the insertion of these ducts, the papillæ, or folds, became much more numerous, and took a compressed form, rounded, and irregularly lobed or cleft.

Beyond the insertion of the hepatic and pancreatic ducts, the papillæ were elongated into cylindrical filaments, which for size and shape might be compared to small earth worms. These filaments were so closed together towards the middle of the length of the canal, as entirely to cover the internal surface of the intestine; some of them were six lines in width; and several were forked or cleft at their extremity. They were continued almost to the insertion of the *ileum* into

the *cæcum*, but there they suddenly ended. The valve of the cœcum was circular, and furnished on its concave surface with many small connivent valves. The interior of the cœcum presented only the wrinkles and inequalities that are usual in most other quadrupeds: but in the interior of the colon there were found a great number of prominent folds in a transverse direction. Near the *rectum*, these folds became extended in width, and they occupied the whole circumference of the canal. The largest of these folds exactly divided the cavity of the colon from that of the rectum: there were scarcely any of these folds in the latter intestine.

The two lungs were not divided into lobes; and they were each about two feet in length, and sixteen inches in breadth. The heart was fifteen inches long, and about a foot in diameter. The *epiglottis* had nearly the shape of an equilateral triangle. In front of each of the ventricles of the *glottis*, there was a small opening in form of the arc of a vertical circle, of which the concavity was backwards: each of these openings communicated with a small excavation at the base of the epiglottis. The tongue, which was nearly two feet long, may be considered as composed of three parts: the anterior part, terminated by a semicircular curve, was furnished with the small filaments already mentioned: the middle part was

perfectly smooth; and the posterior part had a great number of papillæ arranged in quincunx order. Somewhat further back, towards the base of the epiglottis, the papillæ became like small nipples, and on the sides of the epiglottis and the larynx, each of the tubercles was pierced with a small hole.

Mr. Thomas, in the account of his dissection of the young Rhinoceros, bought in London, in 1800, for the Emperor of Germany, already mentioned, says that the small intestines were very short. He likewise asserts, that the skin of the body moved loosely on the flesh, from the circumstance of its being attached by a very loose cellulosity; that it had no *panniculus*, which he considered the animal to have no need of, since the thickness of its skin rendered it insensible to the punctures of insects, and likewise, since its hardness would have prevented it from yielding to so weak a muscle.

This animal, which was very young, had only four molar teeth on each side.

Mr. Thomas, as well as Sparmann, speaks of he great resemblance which there is betwixt the intestines of the Rhinoceros and the horse; he however remarks, that the cœcum was much more voluminous.

He describes the internal villosities of the small

intestines; but only towards the upper part where they are pyramidal.

He speaks of a remarkable structure in the eye of the Rhinoceros, which consists in four apparently muscular loops which are attached to the internal surface of the *sclerotica*, and which Mr. Thomas supposes to have been of use in changing the form of the eye, and shortening the visual axis, when the animal was about to look at distant objects. When M. Cuvier read this remark of Mr. Thomas, he examined the eyes of a Rhinoceros which had been preserved in spirit of wine, to ascertain how far it might be correct; and it appeared to him that these supposed loops were no other than ciliary nerves, surrounded by a somewhat greater cellulosity than usual. As, however, the former gentleman had examined the eye in its recent state, M. Cuvier, with great candour says, that he may have been able to form a better judgment respecting them than himself.

EQUUS QUAGGA. Linn

QUAGGA.

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THE QUAGGA, OR ZEBRA.

UNTIL the last twenty or thirty years the Quagga has been confounded with the Zebra, both by travellers and naturalists. Even our intelligent countryman Edwards, in one of his volumes, has not only described but figured the Quagga, under the name of Female Zebra. General Gordon, to whose zeal the science of natural history is much indebted, appears to have been the first who ascertained these two quadrupeds to be of perfectly distinct species.

The Quagga differs from the Zebra in many essential particulars. In the first place, it is smaller in size: its head is not so narrow, and is more elegant; and its ears are shorter. Thus it approaches nearer to the beauty of the horse than the Zebra does. It no further resembles the ass than in its tail, which, as in that animal, is destitute of long hair towards its base; but the hair at the extremity of the tail is considerably longer, in proportion, than that either of the ass or the Zebra. The legs of the Quagga are slender, and its hoofs small and well formed. The transverse stripes, which so beautifully ornament the skin of the Zebra, are, in a great measure, wanting

on that of the Quagga. In this respect it holds a middle station betwixt the Zebra and the ass; since, in the latter, there is only a single band, which extends across the shoulders, and, with the longitudinal stripe on the back, forms a cross. The Quagga is most strongly marked on the head, neck, and shoulders; there are some faint stripes on the flanks; and the remainder of the body is plain.

The ground colour of the head and neck, is deep brown, inclining to black. The back, flanks, rump, and upper part of the thighs, are of a bright brown, which becomes paler, and changes to a ferruginous grey towards the middle of the thighs. All the interior and under parts of the body, the legs, and the tail, are white. The stripes on the head and neck are reddish grey or white. On the front of the head and the temples these stripes are longitudinal and narrow; but on the cheeks they extend in a somewhat transverse direction, and are rather wider. Betwixt the eyes and the mouth they form a kind of triangles, being curved and much wider towards the middle than at the extremities. The parts which immediately surround the mouth are brown, and without stripes: the edge of the upper lip is greyish: there are ten stripes on the neck. The mane is short and straight, like that of a horse which has been cropped: it has a white mark

opposite to each white stripe on the neck, and the intervening spaces are of a greyish brown.—On each shoulder there are four stripes; but beyond these the stripes become much less conspicuous, being only of a colour somewhat lighter than that of the body. Along the ridge of the back extends a blackish band, which has, on each side of it, a narrow one of ferruginous grey. These three bands are continued from the mane to that part of the tail from which the long hair grows.

Such is the description of the full-grown male Quagga, which is figured in the opposite engraving. But there is reason to suppose, notwithstanding what has been stated by General Gordon, that sex and age have occasionally some influence on the colour and distribution of the stripes of these elegant animals.

The individual above described, was brought from Africa by the captain of a vessel who came from the East-Indies; and it was presented by him to the menagerie at Versailles. It continued there sixteen years; when, with a Zebra and Buffalo, it was conveyed to Paris. In the Menagerie du Museum, at Paris, it lived four years longer, and then died, apparently of old age; at least its skeleton presented all the indications of age.

Its principal dimensions, after its death, were as follow:

Height to the withers, three feet nine inches.

Length from the breast to the buttocks, three feet six inches.

Length of the neck, from the withers to the back part of the head, one foot six inches.

Length of the head, one foot three inches.

Length of the ears, six inches.

Length of the tail, two feet three inches.

When first brought to Versailles, it is said not to have been more than half this size: it must, therefore have been, at that time, very young.---The only change which took place in its stripes was, in their becoming darker with age. Dr. Sparrman says, that the fœtus of a Quagga, which was given to the academy of Stockholm, had its colours much more vivid than is usual in the full-grown animals. The length of this fœtus was thirty-one inches.

Although our Quagga was enured to captivity from a very early age, it retained, till its death, much of its natural wildness. It would sometimes allow persons to approach and caress it; but, whenever it was in the least constrained in its motions, it became exceedingly furious. It would bite very savagely; and would sometimes throw itself on its knees, and in that posture seize in

VIVERRA CIVETTA

THE CIVET

its teeth any thing that offended it. Its cry, very different from the braying of a horse or an ass, resembled the words *ouau, ouau,* harshly repeated, in a sharp tone, for fifteen or twenty times successively. It always exerted this cry when it passed in sight of horses or mules. Its voice has been compared to the barking of dogs; but it has much greater resemblance to their howling. It is by no means improbable that the name of Quagga, or rather Khoua-Khoua, given to this quadruped by the Hottentots, has been derived from its cry.

This Quagga ate but little: a small bundle of hay, and a few oats, or a little bran, were sufficient for each day. On dissection, after its death, no parts of its body appeared to be essentially different from those of the horse.

The following is an abstract of the account given by Professor Allamand, of the Quagga.---- "Until very lately," says this learned naturalist, "I have been acquainted only with the name of this animal, and even that very imperfectly. In the journal of an expedition into the interior of Africa, undertaken by order of the governor of the Cape of Good Hope, it is stated that the travellers observed, amongst other animals, wild horses, asses, and Quachas. The character of the Zebra and Quagga is very different. The latter is much more docile and tractable than the former. It has been found impossible to subdue

the wildness of the Zebra in such manner as to render it of use in domestic employments; whilst the peasants in the colony of the Cape are frequently known to yoke the Quaggas in their carts; and they draw these without any difficulty." Dr. Sparrman says, that he has seen in the streets at the Cape of Good Hope, a Quagga yoked to a cart along with five horses. He saw another, in a domestic state, at Zwellendam. The latter was so fat, sleek, and healthy, that he informs us he has seldom seen a horse in better condition.

Quaggas are stout in the body, and for their size, very strong. It is true that they are occasionally ill-tempered; and that they bite and plunge violently. If a dog happens to approach the place where they are standing, they immediately drive him away, by striking him with their feet; and sometimes they will attempt to seize him in their teeth. Even the spotted hyænas, which are very numerous at the Cape, do not dare to attack the wild Quaggas.

In this state they are sometimes seen in troops of a hundred and upwards; but a Zebra has never been remarked amongst them, although both species inhabit the same parts of the country.

Professor Allamand is of opinion that these animals do no not differ from the Zebra more than mules do from the horse or ass. And he asks whether the Quaggas may not properly be consi-

dered as mules of the Zebra, and a white species of horse, which Leo Africanus and Marmol describe to inhabit several of the interior parts of Africa. He informs us that the female Zebra and the ass have been known to produce offspring; and states that the common mules are not always sterile; and, as he conceives the affinity of the horse and Zebra to be much closer than that of the horse and ass, so he believes that their offspring may be much more prolific than those of the latter animals.

General Gordon sent to M. Allamand a drawing and description of the Quagga. The former is engraved in the supplementary volumes to the Natural History of M. de Buffon. He informed M. Allamand that, when he was in Africa, he one day saw two troops of Quaggas, the one consisting of ten full-grown animals, and the other, of an equal number of young ones, accompanied by their mothers. He galloped his horse betwixt the two troops; and one of the young ones, having lost sight of the rest, immediately followed his horse, as if he had been its mother. But being at this time in the country of the Bosjemans, and far from any human habitation, he was under the necessity of abandoning the little animal on the following day, from the want of milk for its support. He says that there is scarcely any other difference betwixt a young and a full-grown

Quagga, except that of size. The difference betwixt the males and the females he likewise states to be very small.

Since the Cape of Good Hope has been colonized from Europe, these animals have retired from its neighbourhood, and they are now only to be found in the interior of the country. The Hottentots eat their flesh, which they consider as excellent food; but the Europeans at the Cape say that it is very insipid and bad.

THE CIVET.

THERE are found in several of the warmer parts of the continent some animals which, at the same time that they exhibit a near alliance to the weesel and martin tribe, by the elongated form of their bodies, resemble somewhat the cats; since their tongue is clad with spines, and their claws are in part retracted whilst they walk, so as to preserve their sharp points from injury against the ground. Most of these quadrupeds are remarkable for the powerful odour which they emit: this odour proceeds from a greasy kind of matter secreted by certain glands, which are situated in the posterior and under part of the body.

Linnæus originally arranged these animals in the same tribe with the badger, but afterwards, in a genus to which he gave the name of *Viverra*.

Civets feed on flesh, eggs, blood, and almost all kinds of saccharine substances. They have five toes on each foot. Their muzzle is somewhat pointed: they have six incisive or cutting teeth, and twelve grinders, in each jaw.---Of the latter, the four furthermost, both above and below, are flat on the surface, whilst the

others are somewhat sharp. This arrangement seems peculiarly adapted to their mode of feeding indifferently on animal and vegetable substances. Their viscera are remarkable from the circumstance of the large and small intestines being nearly equal in size, and having their division marked only by a small cœcum. In this respect these animals differ very essentially from the martins.

The name of *Civet* was unknown to the ancients. It is derived from an Arabic word signifying a *perfume;* and it was no doubt originally employed in Europe to designate only the drug, which is produced by the Civet.

This drug has for many years been an object of considerable commerce. Its qualities in medicine have been highly spoken of; and, in former times, it was considered so delightful a perfume as frequently to be carried about the clothes of persons when full dressed. In the latter employment, it was succeeded by musk, and afterwards by amber, both of which are likewise now out of use as perfumes. Civet is occasionally used in the present day, in the composition of medicines; but its consumption has been surprisingly diminished of late years. It is imported from India and Africa into the continental parts of Europe, chiefly by way of Alexandria and Venice; and sometimes the animals which produce

it, are also imported as objects of curiosity.—Cardon and Scaliger have had them in Italy; Agricola and Kentmann, in Germany; and our naturalist, Caius, in England. Belon informs us that he saw one at Alexandria: and afterwards, when the taste for natural history became more general, they were to be found in several of the menageries of Europe. The academicians of Paris dissected five; and Blasius, Swammerdam, Moraud, and Peyronie, each one. Still, however, it was not discovered that two species were confounded under the same name. M. de Buffon was the first who distinguished them. He remarked that in one of these the tail was longer than in the other, and was neatly marked with black and white annules; whilst the other had a tail shorter and less various in colour: that the latter had likewise a kind of mane, capable of being erected and depressed, which the former had not, and that its muzzle was less sharp. To the species with a mane, he reserved the name of *Civette:* and to the other, with a long and annulated tail, he gave the denomination of *Zibeth.* Buffon was, at the same time, desirous to establish betwixt the two species a distinction of climate; but in attempting this, he found some difficulty. It is true that the Civet is found in Africa; but it has not been proved that it does not exist elsewhere, nor even that it is the only

one of the two species which exists there. Some doubts have been suggested whether the Zibeth is really an Asiatic quadruped. The animal of Caius, described by Gesner, was certainly the Zibeth, and it was brought from Africa; and that of Peyronie, which Buffon himself regarded as a Zibeth, came from Senegal. Even the figure given by Belon has greater resemblance to the Zibeth than to the Civet.

It is somewhat singular that an animal so remarkable as this should have been unknown to the ancients, who certainly imported animals from countries much more distant than those in which the Civets are produced. Yet this fact is well established, although Gyllius hath asserted that the Civet was their *pardalis*, and Belon, that it was confounded by them with the *hyæna*.

The Civet, it is true, by a singular coincidence, bears all the characters of form and colour which are mentioned in the description of the hyæna by the ancient naturalists. It has a long mane on its back, a pouch beneath its tail, and dark transverse stripes on its body; but its size is much smaller, and its odour so remarkable, that it is quite impossible they should have omitted to particularize it. Belon, who had been in the country which the hyænas inhabit, had a very indistinct and confused notion respecting them: he has given a tolerably good figure of the hyæna,

but under the denomination of *Lupus Marinus*, or Sea-Wolf; thus confounding it with the Seal, and transforming a quadruped which frequents the deserts of Syria and Africa, into a marine animal that is found on the sea shores of Norway and Greenland.

With respect to the Civet being the pardalis of the ancients, Gyllius appears to have founded his opinion on the circumstance of their assertion that the pardalis attracted other animals by its agreeable odour. But, besides that these terms are equivocal, and do not indicate whether this odour was likewise agreeable to mankind, there arepositive and most satisfactory proofs that their pardalis was our panther.

The Civet measures two feet three or four inches in length, exclusive of the tail; and from ten to twelve inches in height at the shoulder.--- Its muzzle is somewhat less pointed than that of the fox, yet sharper than that of the martin. Its ears are rounded and short. Long whiskers ornament its lips. The thumbs or inner toes, particularly those of the hind feet, are much shorter than the others. The hair with which its body is clad, is long, and somewhat coarse. That, particularly, which extends along the middle of the back, from the neck to the tail, forms a kind of mane which the animal has the power of erecting and depressing at pleasure; and which it ar-

ways erects when irritated. The hairs of the tail are tufted, and those on the upper part are capable of being raised in the same manner as the mane. The general colour of the animal is a dark greyish-brown, varied with spots and interrupted stripes of blackish-brown. A band of the latter colour extends from the back of the head almost to the extremity of the tail. The sides of the body are marked with irregular spots, which are largest upon the rump and thighs. All the legs, as well as the posterior half of the tail, are of an uniform black brown. The base of the tail has three or four annules of the same colour.---The head is whitish; but a brown band, after encircling the eye, descends along the cheek, and beneath the chin. The upper part of the throat is brown; and stripes or lines of this colour ascend obliquely the sides of the neck.

The part which is most remarkable in the anatomy of the Civet, is the pouch that contains the perfume. The external opening of this is alongitudinal cleft about an inch in length. This cleft, which is equal in size in both sexes, leads to two cavities, each capable of containing substance of the size of an almond. The internal division of these cavities is slightly clad with hair, and has several small orifices, each of which conducts to an oval follicule some lines in depth, and of which the concave surface is itself pierced with

numerous pores. It is from these pores that the odoriferous substance issues: this fills the follicule, and when the sides are pressed, it may be seen to issue from the pores somewhat in the form of *vermicelli*. All these follicules are enveloped by a membraneous coat, which is supplied with blood-vessels; and this coat is covered with a muscle which proceeds from the pubis, and has the power of compressing all the follicules; and with them the whole pouch to which they are attached. It is by such compression that the animal is enabled to rid itself of a superfluity of its perfume. Besides the odoriferous substance, it has been remarked that from two other small orifices a blackish kind of liquid is emitted, the smell of which is very offensive.

No accounts have hitherto been given of the manners of the Civets, of their modes of generation, the number of young ones they produce, their period of gestation, the term of their life, or the resources with which they have been supplied for the purpose of procuring food, or of defending themselves from the attack of enemies.---All that is known respecting them is, that if they are not tamed when young, they continue extremely wild, and are occasionally very ferocious. Any object to which they are not accustomed excites their choler; and this they indicate by crying out, and bristling the hairs of their mane. It

was in this attitude that our figure was drawn; and indeed it is the attitude in which the animal is most commonly seen. When in good humour it is as gentle and familiar as a cat. Belon, and Scaliger assert, that Civets have been known to follow their masters like dogs. There is reason to suppose that nearly all the perfume of the Civet which is at present sold in Europe, is the production of animals in captivity.

It is said that, in a wild state, the Civets inhabit only arid and sandy countries; and that they are never to be found in such as are humid and shady. Those which have been brought into Europe are not, by the change, prevented from producing their perfume, but they have never been known to breed.

The native country of the Civets appears to be the middle part of Africa, but they are not equally scattered over this. They are very abundant in Guinea; and they are sometimes, though rarely, found in the south-west parts of Egypt. With respect to Asia, it is impossible to distinguish, from the accounts of travellers, the regions which produce the Zibeth, from those which produce the Civet. We can only say, in general, that one or the other of these species certainly inhabits all the hotter countries of this part of the world, from Arabia almost to New Guinea; unless we are to suppose that many of the travellers

have mistaken, for the Civet or Zibeth, a species which is much smaller and marked with more distinct spots, described by Sonnerat under the name of *Malacca Civet*, the *Viverra Malaccensis*, of Linnæus, and *Genette du Cap*, of Buffon.

It was for a long time believed, on the credit of the editors of Hernandes, that the Civet was also an inhabitant of America. In fact, Recchi has given a very correct figure of the Zibeth, under the name of *Animal Zibethicum Americanum*: and the Capuchin Bolivar has related, from Faber, that this species was found in parts of South America, as well as in Africa; and that in Brasil its perfume was a principal article of commerce. But Buffon, and after him Zimmerman, observes, that Fernandes has positively asserted that the Civets of America were imported thither from the Phillipine Islands. It is true that M. de Azzara has attempted to defend Bolivar, by asserting that he mistook the *Grison*, (*Viverra Vittata*) of Brasil, for the Civet, since that animal also produces a musky species of perfume when irritated. But the Capuchin must have had a bad memory indeed, to advance a statement so incorrect as that the Brasilians collected and sold the perfume from animals of their own country.

This substance is either taken from the animals when alive in a domestic state, or it is collected

from the rocks and shrubs on which the wild Civets deposit it. It is easily ascertained when they have a superabundance, by the uneasiness which the animals shew, and a state of agitation that at other times is not observable. In order to collect it from them, they are seized by the feet, and a small spatula is introduced into the pouch which contains it. Their sweat emits also a musky kind of scent; and it has been said, but without any appearance of probability, that this is frequently mixed with the true civet, for the purpose of augmenting the quantity. The males yield more civet than the females; though the odour of the latter is said to be twice as strong as that of the former. This odour is insupportably powerful when the civet is fresh; and it is not until after a great while that it becomes so weakened as to be agreeable. Civets are fond of sugar, eggs, and small birds, but particularly of fish; and the better they are fed, the more profitable, a great deal, will be the perfume. The proprietors of these animals, in Lisbon, formerly made much money by them; and in Amsterdam several were kept.

During the time that the French army was in Egypt, the king of Darfouhr presented four Civets to the principal generals. They were sent as rarities, since the inhabitants import them from distant countries. In Darfouhr a singular

means is adopted to augment their perfume. A small piece of butter, or other fatty substance, is introduced into the pouch; and the animals are then agitated by shaking and beating till they become very furious. This accelerates the secretion of the civet, and the butter is so impregnated with it, as to become of itself a strong perfume. The females of Darfouhr use this butter for the purpose of greasing their hair.

The individual which is represented in the opposite engraving, was purchased at Nantes, of the captain of a slave ship, who stated it to be at that time two years old. It had been in the Menagerie du Museum, at Paris, five years; where it was fed on flesh, of which it ate about two pounds in the day; and it drank two glasses of water.

It constantly emitted a musky odour, but more particularly when it was irritated. It passed nearly the whole of the day, and of the night, in sleep, rolled up almost like a ball, with its head betwixt its legs.

The best figure of the Civet, besides the one which is here published, is that of Perrault; the next is that of Buffon. Those of Johnston and Blasius are tolerable: the rest are bad.

THE

EGYPTIAN ICHNEUMON.

WE are under the necessity of contradicting the opinion of M. de Buffon, and other naturalists, that the Indian and the Egyptian ichneumon are animals of the same species, differing somewhat only in size and in colour. Satisfied with the account given by Prosper Alpinus, who, about the year 1580, resided three or four years in Egypt, as physician to the Venetian consul, they have conjectured that the Ichneumons which were at that time domesticated there, had by degrees undergone considerable variation, both in form and appearance. But several naturalists who, of late years, have resided or travelled in countries where the animals are found, assert that the Indian Ichneumons are much too ferocious to admit of domestication; and that they do not, in any respect, appear to have been changed. In fact, there are several species nearly allied to each other; but three in particular which differ in size, in colour, and in country of habitation.

The first of these is the Indian Ichneumon, the Mangouste of M. de Buffon. It seldom exceeds

the length of ten or twelve inches. Its tail also is, in proportion, shorter than that of the other species, and terminates in a point. The body is ornamented with transverse stripes alternately red and blackish, in number from twenty-six to thirty. The under part of the lower jaw is yellow; and the lower parts of the legs are black.---This animal is known in India by the names of *Mungo*, and *Mangutia*, whence Buffon has derived his name of Mangouste. The figure of it in the work of this naturalist was compared with a living individual, in the possession of the counsellor of state Regnault de St. Jean d'Angeli, and was found to be an exact representation.

The second species is a native of the Cape of Good Hope; and there are three correct figures of it, namely, by Vosmaer, Edwards, and Buffon. This Ichneumon is one-fifth larger than the last. Its tail, as in that, terminates in a point. Its fur is more bright, and of an uniform colour, both on the body and legs.

The third species, or that which we have figured, and which is the subject of the present article, is sufficiently common in most parts of Lower Egypt; and we do not know that it inhabits any other country. It is much larger than either of the others, measuring about twenty inches in length, exclusive of the tail, which is at least as much. Its colour is a pale reddish-

grey, each hair being annulated or mottled with brown and dusky, in such manner as to render the appearance of the fur speckled as in some of the larger baboons. The muzzle and the feet are black; but it is a tuft of long black hairs terminating the tail, and expanding towards each side like a fan, which principally characterises the species.

These three kinds of Ichneumon resemble each other so exactly in their several proportions, that we cannot be surprized they should have been confounded. Their head is short, somewhat flattened on the forehead, and, from thence to the muzzle, exactly conical. The upper lip projects a little beyond the lower. On the head and feet the hair is smooth; but it is long and rough on all the other parts of the body. The shortness of the legs give to the Ichneumon the characteristic appearance of the ferret and polecat. It is at first sight difficult to ascertain whether these animals belong to the tribes which tread on the whole sole of the foot, as the bears, hedgehogs, and some others; or to those which tread only on the toes in walking, as the dogs and cats. From the length of the tarsus it has been imagined that the Ichneumons trod only on their toes; whilst, on the other hand, the nakedness of the whole under part of the foot would induce us to suppose that the entire sole was applied to the ground.

Two of the species which were examined by M. Geoffroy, whilst alive, walked certainly on their toes only, and never rested upon their heel except during repose, or when they raised themselves upright on their hind feet, for the purpose of looking around them.

There are two circumstances which distinguish the present animals from all others. Their tongue is as rough and papillous as those of the cats; and they are furnished with glands under the tail, from which is secreted an odoriferous liquid. This liquid is contained in a kind of pouch, that has an aperture externally, which the animals can open and close at pleasure. The civets, as it is well known, have a similar provision, but the situation of the orifice is very different. In the former it is immediately under the base of the tail, and in the latter much lower.

Although the Ichneumon is very common in Egypt, yet it seldom allows itself to be observed. It is difficult to be approached, being exceedingly timid and fearful. It does not often run over the open grounds, but almost always glides along the channels which serve for watering the land; nor does it ever expose itself, except in situations where there is nothing by which it can be sheltered. Such, no doubt, is the cause of those undulating motions, and of that uncertain and oblique gait which this animal always has in a

state of domestication. Although confident of the protection of its master, it never enters a place where it has not before been, without indicating the greatest apprehension and alarm; its first care is to study in detail, and as it were to feel along all the surfaces by smelling at them.---And yet it is said not to have any great acuteness of scent; for its anxiety to succeed is very evident from the continual motion of its nostrils, and from a noise which it makes, not much unlike the panting of a dog when out of breath. Whenever, in a wild state, it leaves the furrow or channel in which it is concealed, for the purpose of going to drink in the Nile, it always first looks carefully around, in order to see if the way is clear. It crawls along upon its belly, and, if any thing alarms it, is ready in a moment to steal back again. After much apparent hesitation, it makes a bound either to the river in order to drink, or on its prey, if such happen to be within reach.

An animal which appears to have so much natural timidity, may be supposed very susceptible of education. It is, says M. Geoffroy, to be tamed without difficulty, and is then extremely docile, gentle, and caressing. It easily distinguishes the voice of its master, and will follow him like a dog. In the course of a very short time the Ichneumon will free a house of all the rats and mice with which it was infested. It gives them no rest,

Warner sc.

of the size

VIVERRA ICNEUMON

THE ICNEUMON

but pursues them without intermission until they are extirpated.* The quantity that it kills is much greater than what it devours, for unless strongly urged by hunger, it only eats the brain, and sucks the blood. When it is about to feed, it retires with its prey into some place of concealment; and if any one approaches or attempts to take it away, it will growl at, and even bite him.

In Egypt the Ichneumon feeds usually on rats, serpents, birds, and eggs. The inundation of the Nile compels it to abandon the fields and take refuge in the neighbourhood of villages, where frequently it commits great depredations among pigeons and poultry. Yet the Egyptians are not much annoyed by these injuries. Their chief care, at this period, is the destruction of foxes, jackals, and larger animals of prey, which, at the rising of the water, also desert the plains. The Ichneumons now thrown into the midst of cunning and powerful enemies, are destroyed in great numbers. This tends considerably to prevent their multiplication; but in Upper Egypt they have an enemy more formidable than any of these, in a large species of lizard, which subsists on the same kind of prey as the Ichneumons, adopts similar artifices in procuring it, and is constantly found inhabiting the same furrows and channels

* See the subsequent account given by Sonnini.

as these quadrupeds. The Lizard is not quite so large as the Ichneumon, but, as it is much more courageous and active, it overcomes and destroys it without any difficulty. How different from this is the account related by Pliny, of the engagements between the serpent, which he calls Asp or Aspis, and the Ichneumon. We will insert his description in the quaint and amusing phraseology of his translator Philemon Holland. "The manner of the Ichneumon is to wallow several times successively in the mud, and then to dry himself against the sun. And when he is thus armed, as it were, with many coats, he goeth forth to combat with the asp. In the fight he sets up his tail, and whips about, turning his tail to the enemy, and therein latcheth and receiveth all the strokes of the asp, and taketh no harm thereby. And he so long maintains a defensive battle, until he spy a time that he can catch the asp by the throat and throttle it."

The Ichneumons are considered an highly useful race of animals in destroying the eggs of the crocodiles, and in thus checking the multiplication of these enormous and frightful reptiles.---But the notions of the ancients that they attacked full-grown crocodiles, leaped down their throats, and devoured their intestines,* are too absurd to

* "When the crocodile is fast asleep, with his mouth open, the Ichneumon spieth his advantage,, and seeing him lie thus broad

obtain any credence in this enlightened age. M. Denon goes further: he says that the two animals have no occasion to quarrel; that they do not even inhabit the same parts; for that no crocodiles are found in Lower Egypt, nor any Ichneumons in the upper country.

In numerous other respects were the ancients ignorant of the true history of these animals.---- Pliny says that the Ichneumon lives only about six years; and yet it is now satisfactorily ascertained that its full growth is not attained till the expiration of nearly two years. Strabo and Aristotle both assert that it is not found in Egypt. The latter states its timidity, and at the same time its prudence to be such, that when it combats the larger species of serpents it calls to its assistance several others of its own kind. Elian gives nearly the same account as Pliny, respecting the battles of the serpents and Ichneumons. Plutarch says that they will spring upon the large serpents, and that on these occasions they are always careful to protect their muzzle with their tail.

To the above account we will add some observations which have been made by M. Sonnini upon the article Mangouste, in the Natural History of Buffon.

gaping, whippeth into his mouth, and shooteth himself down his throat as quick as an arrow; and then gnaweth his bowels, eateth an hole through his belly, and so killeth him!"—*Holland's Translation of Pliny.*

Much, he says, has been written, and many fabulous accounts have been related of the Ichneumon. It was one of those animals which, among the ancient Egyptians, were held in superstitious reverence. Whilst living, it was entertained with great care, and, when dead, had peculiar honors paid to it. Funds were, in many instances, appropriated for its support. It was usually fed on bread steeped in milk, or on the fish of the Nile cut into small pieces. If any one killed an Ichneumon he was considered guilty of a heinous crime. The object of worship amongst a celebrated people, the supposed protector of a country the most singular in the world, against a scourge truly lamentable, we cannot be surprised that its history has been involved in obscurity, and that the most marvellous accounts should have been given respecting it. Even travellers have, till late years, been contented merely with seeing the animals. Disinclined to be at any trouble in examining whether the ancient traditionary notions were founded in truth or in error, they have successively copied the absurd relations which Pliny and others before them had given.

Sonnini saw, and carefully enquired into the history of the Ichneumon, in Egypt, its native country. He says, he has endeavoured to give a true account of the character and utility of the animal, and to reduce, to their real value, the

services which have been the subject of so much boasting and exaggeration.

With a disposition that renders these animals easy to be tamed, they are not, he informs us, by any means frequently domesticated in Egypt.---- The present inhabitants do not even know whether they were reared in a domestic state by their ancestors. It is therefore more than probable that the Ichneumons, which Belon* and Prosper Alpinus,† assure us they saw in this state were only individuals bred up as curious rather than as useful animals. It is well known that if the Ichneumon pursues and destroys the rats and mice, he likewise devours poultry and pigeons; and the former qualification would be but a bad compensation for the latter, when we recollect that cats, which are sufficiently numerous in most parts of Egypt, are at the same time both more useful and less inconvenient.

Resembling, in their habits of life, the ferrets and polecats, these animals feed on different kinds of rats, mice, and reptiles. They ramble round the inhabited places, stealing silently along upon their bellies, for the purpose also of surprising poultry, and devouring eggs. In the poultry-yards they sometimes do great damage, not so much by the quantity which they eat, as by de-

* Livre ii. chap. 22.

† Description of Egypt, lib. 4.

stroying infinitely more than their necessities require.* This voracious propensity cannot even be counteracted by education, good treatment, and abundance of food.

Fouche D'Obsonville had an Ichneumon which he bred up almost from the moment that it first opened its eyes. It had been fed with milk, and afterwards with meat mixed with rice. This animal became more familiar than a cat: it would on all occasions obey the voice of its master, and even follow him whenever he walked abroad.---- He one day carried to it a small water snake alive. Its first movements were strongly expressive of astonishment and rage; bristling all its hairs, it glided softly behind the reptile, and, in an instant, with wonderful celerity, sprang upon its head, which it seized and crushed with its teeth. This roused in the little animal the innate propensities of its species. Till that time it had lived in a court-yard, where a numerous flock of poultry was kept, without paying any attention to them whatever. But it one day afterwards strangled almost the whole of them. It ate very little, but had sucked the blood of several.†

The natural appetite that the Ichneumons have

* Dr. Sparrman gives a similar account of the Ichneumon which inhabits the Cape of Good Hope.

† Essais Philosophiques sur les mœurs de divers animaux étrangers, p. 86.

for eggs, induces them frequently to scratch up the sand for those of the crocodile; and it is chiefly by this means that they oppose the multiplication of that reptile. As for the fable of their destroying the full-grown crocodiles, it is much too ridiculous to deserve any credit; and if these animals have sometimes been seen to spring upon the small crocodiles, it must be attributed to their natural inclination to pursue as food all kinds of reptiles, and by no means to any peculiar law of nature which impels them to retard their propagation.

But what chiefly tends to prove that mankind have been wrong in attributing such propensities to the Ichneumons is this: that, in the greatest part of the north of Egypt, betwixt the Mediterranean sea and the village of Siout, beyond Cairo, they are found in great abundance, whilst they are rare in Upper Egypt; where only the crocodiles are particularly numerous. The latter, on the other hand, are not often seen in the Lower country, which, better cultivated, more inhabited, more moist and shaded, affords an abundant supply of other kinds of food for the Ichneumons.

As for the assertion that the Ichneumon has a remedy against the bite of serpents in the root of the plant denominated by Linnæus *Ophioriza Mungos*; it must be classed amongst the other

absurdities that have been related of this quadruped. The ibis, storks, and other serpent-eating animals are, as well as the Ichneumon, exposed to injury from the venomous fangs of these reptiles; and yet it has not been stated that they adopt, or even are acquainted with any means of counteracting the effect of the poison. So far from this, it has been remarked by M. D'Obsonville, that the Ichneumon inhabits, and always with the same desires and instincts, many countries where this specific is altogether unknown.*

These animals are not at present known in Egypt, either by the name of *Ichneumon*, or by the French name of *Mangouste*. The denomination of *Pharoah's Rat*, which Hazelquist has mentioned, appears to have been given to them only by Europeans who have been established at Cairo.—The Dutch call them *Maus-hund*. In Northern Africa they have the name of *Tezer-dea*, and in Egypt of *Nems*.

The Ichneumon has been figured by a great number of travellers and naturalists, but the only correct representations which we have seen, are those of Schreber, copied into Dr. Shaw's General Zoology, and that of Buffon, which bears the name of Le Grande Mangouste.

* Essais Philosophiques, p. 88.

THE END.

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